

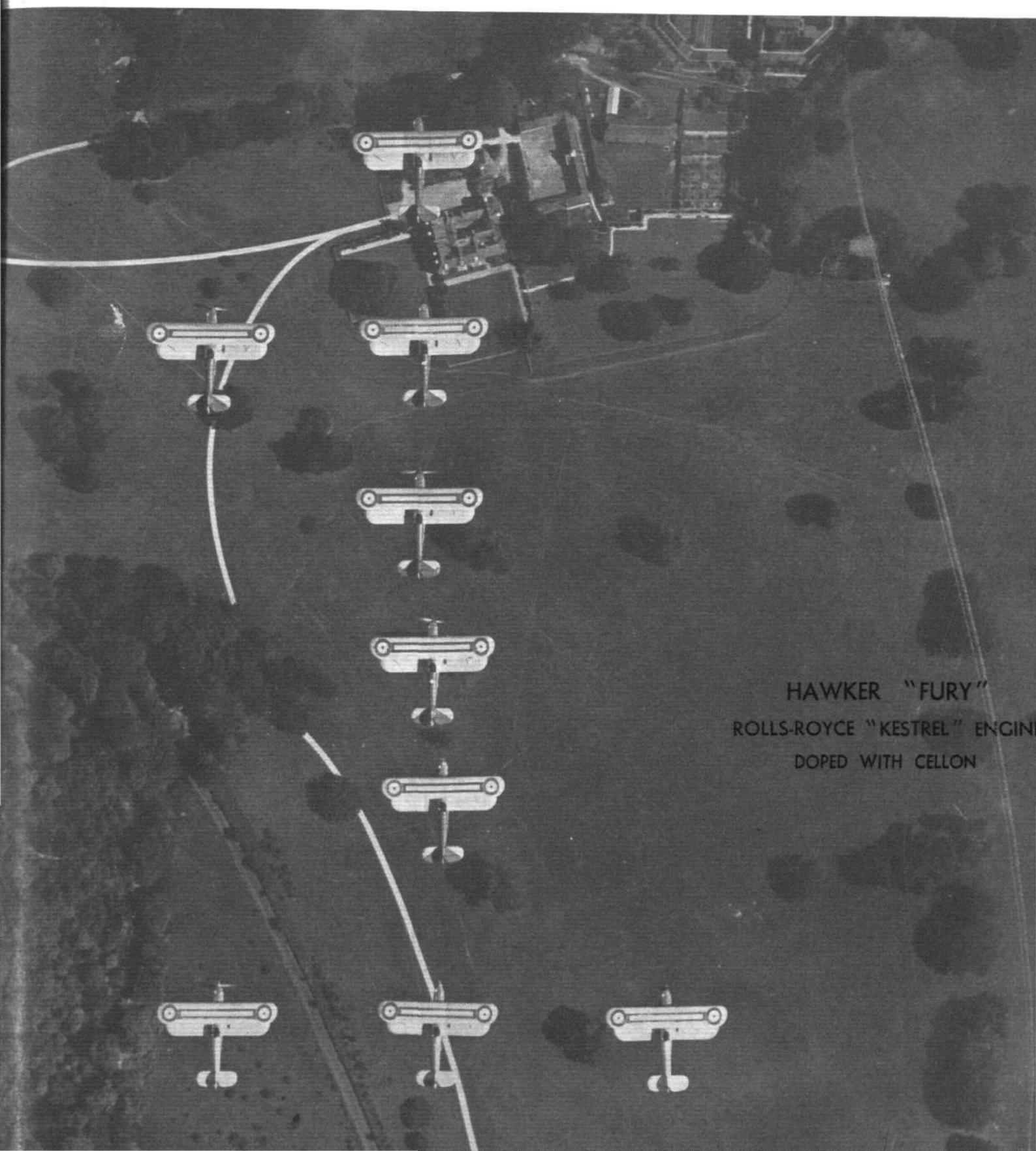
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AND AIRSHIPS

No. 1382
Vol. XXVII

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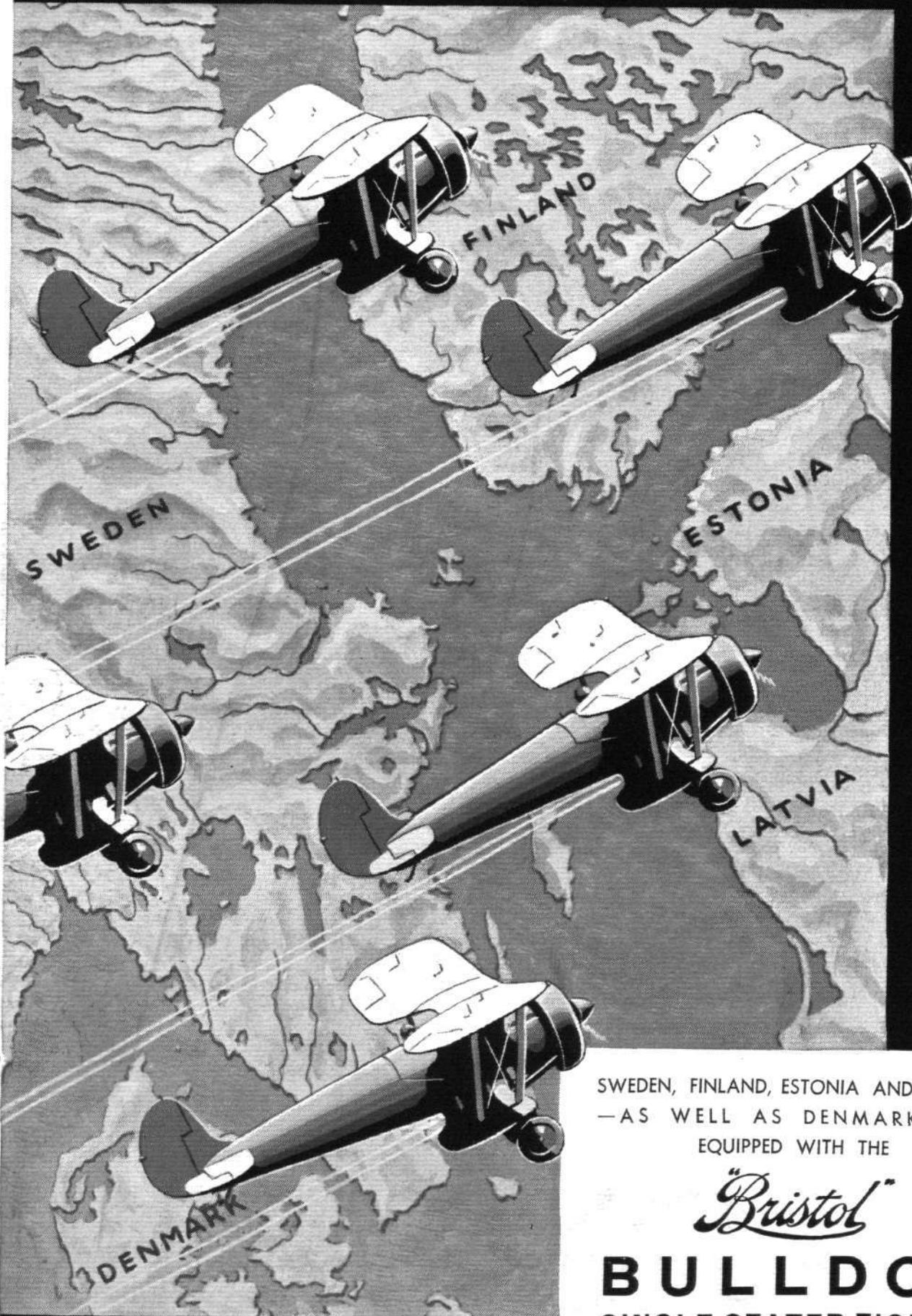


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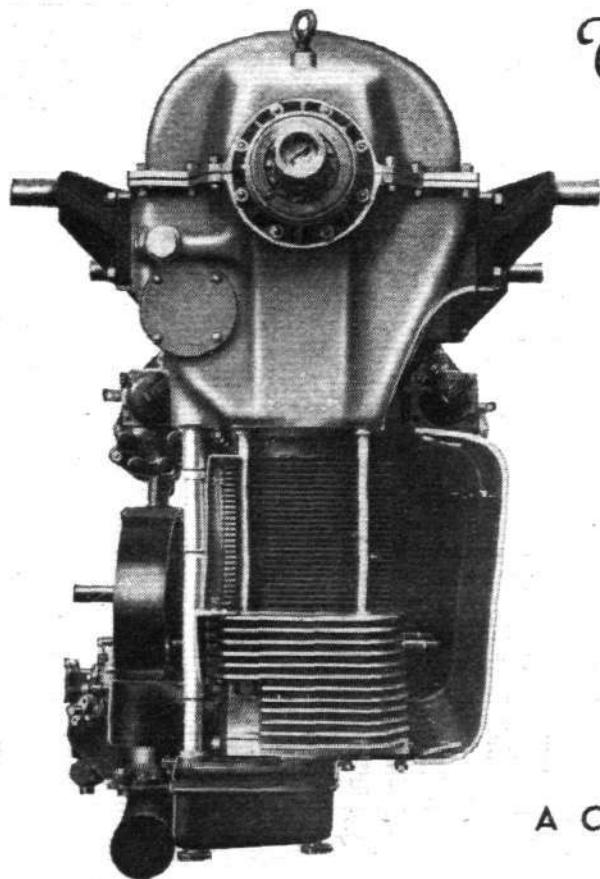
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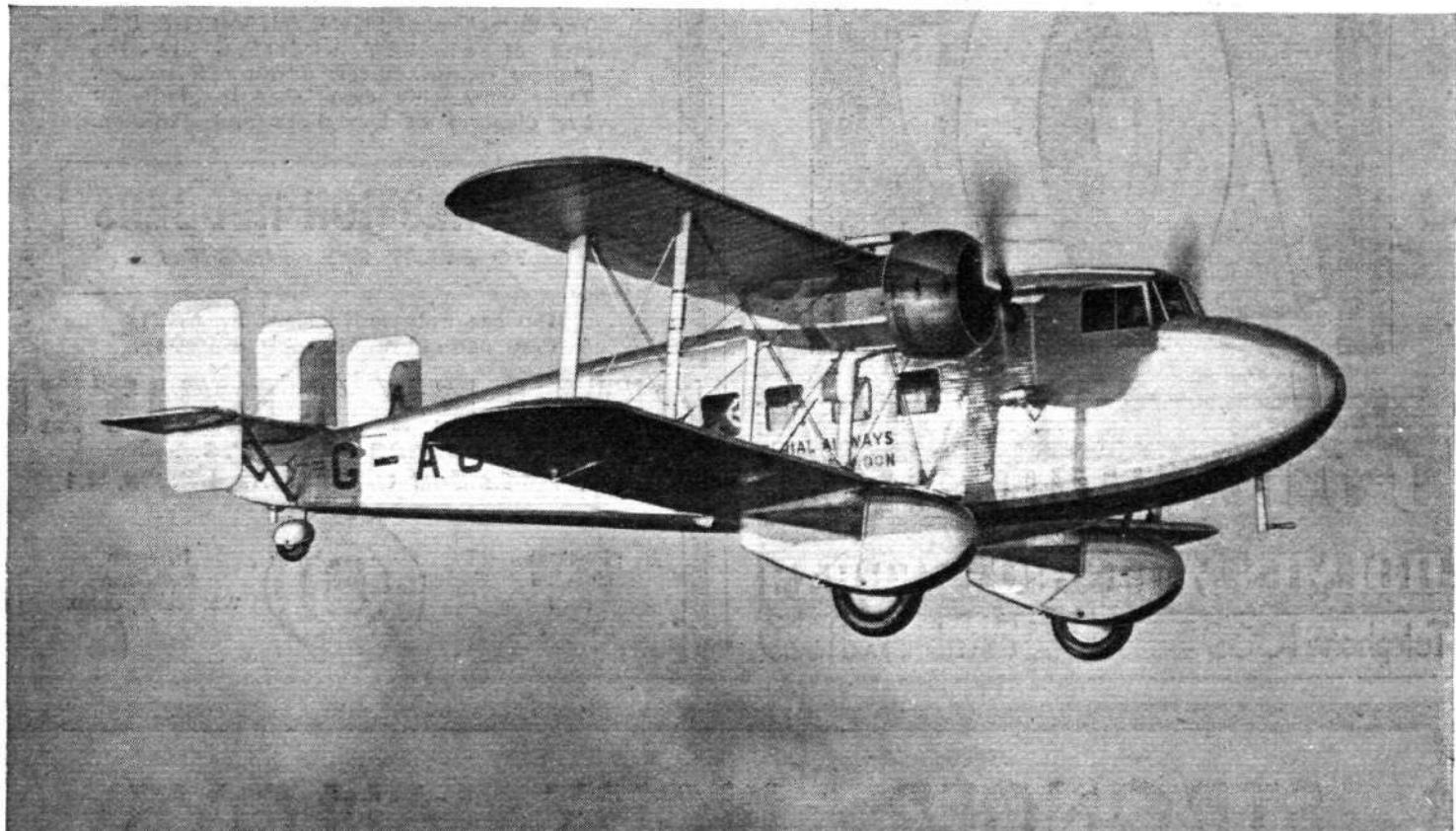
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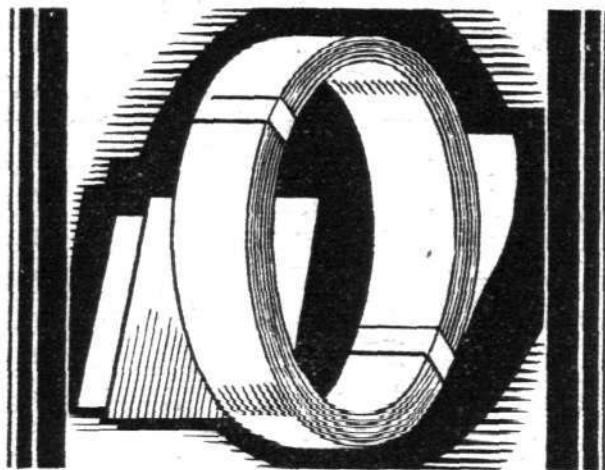
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No. 1382. Vol. XXVII.

JUNE 20, 1935

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Editorial, Advertising and Publishing Offices: DORSET HOUSE, STAMFORD STREET, LONDON, S.E.1

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Why Not the A.A.F.?

EIGHT infantry battalions of the Territorial Army are to be converted into anti-aircraft units, three of them to brigades of Royal Artillery and five to searchlight battalions of the Royal Engineers. This move by the Government arouses many reflections.

Everybody must approve the determination to provide more anti-aircraft ground defences, for without them the scheme for expanding the R.A.F. would be largely futile. The principle of the step is above cavil, but the method of carrying it out is open to question. One must ask if our Army is so large that it can afford to lose eight infantry battalions at one fell swoop. Such a loss is almost the equivalent of a defeat in a fairly considerable land battle. These Territorials will continue to be raised and administered and paid under the auspices of the War Office, but for operations they will be placed under the Air Ministry and will receive their orders from the Air Officer Commanding-in-Chief Air Defence of Great Britain. For all fighting purposes they will be lost to the Army. Conversion, as a substitute for raising new units, will save the money of the taxpayer. The Government, instead of paying its way, is borrowing from, or rather robbing, the Army Peter to pay the Air Force Paul, and the principle is not sound.

It is, in fact, strange that such a highly important and highly technical work as anti-aircraft defence should be entrusted to a volunteer body of men who, except on annual training and in war, work for love and not for pay. Defence of the homeland is the undertaking of the Territorial Army, and its men cannot be sent overseas without a further act of volunteering. Dealing with air raiders is most certainly defence of the homeland, but it is unlike any other form of defence. The men responsible for it cannot justly be called second-line troops, for in the event of war they are likely to be firing on the enemy before any other troops are engaged

at all. They must always be keyed up to the highest pitch of training, for no respite is likely to be given them after the outbreak of war in which they can complete training. If they ever have to go into action it will probably be at a moment's notice, and they will be required to display immediately all the accuracy and mastery of their weapons and instruments which is ordinarily to be expected only of highly trained full-time specialists.

Esprit de Corps

That very great proficiency is not impossible for part-time volunteer organisations has been demonstrated by the Auxiliary Air Force in general, as well as by the crack battalions of the Territorial Army. The knowledge of the great responsibility which will rest upon them is likely to act as a stimulus to the men, and to bring about regular attendance at parades as well as intensive study of the delicate range-finders and sound-locators which are the foundations of successful anti-aircraft work. We may take it that the recent awakening of the Government to the realities of the situation, and the great popular interest which the air question has aroused, mean that the War Office will provide all the anti-aircraft units with the latest and most efficient equipment of guns and instruments. For the time being, at any rate, we hope that the charge that the Air Ministry is only interested in having these units efficient, while the War Office is only interested in having them cheap, will have lost its force. At the same time no good is likely to come from the system of divided responsibility. The Territorial officers and men wear the khaki uniform of the Army, but they will take orders from a Commander-in-Chief wearing the blue uniform of the Air Force. Such things militate against *esprit de corps*.

The sensible thing would have been to have handed the whole ground organisation of anti-aircraft defence over to the Air Ministry. That would have avoided all

possibilities of disagreement between the two Services and the two Ministries, it would have stimulated the *esprit de corps* of the gunners and engineers who have to fire the guns and work the searchlights, and it would have avoided the serious loss of eight battalions of infantry to the Territorial Army.

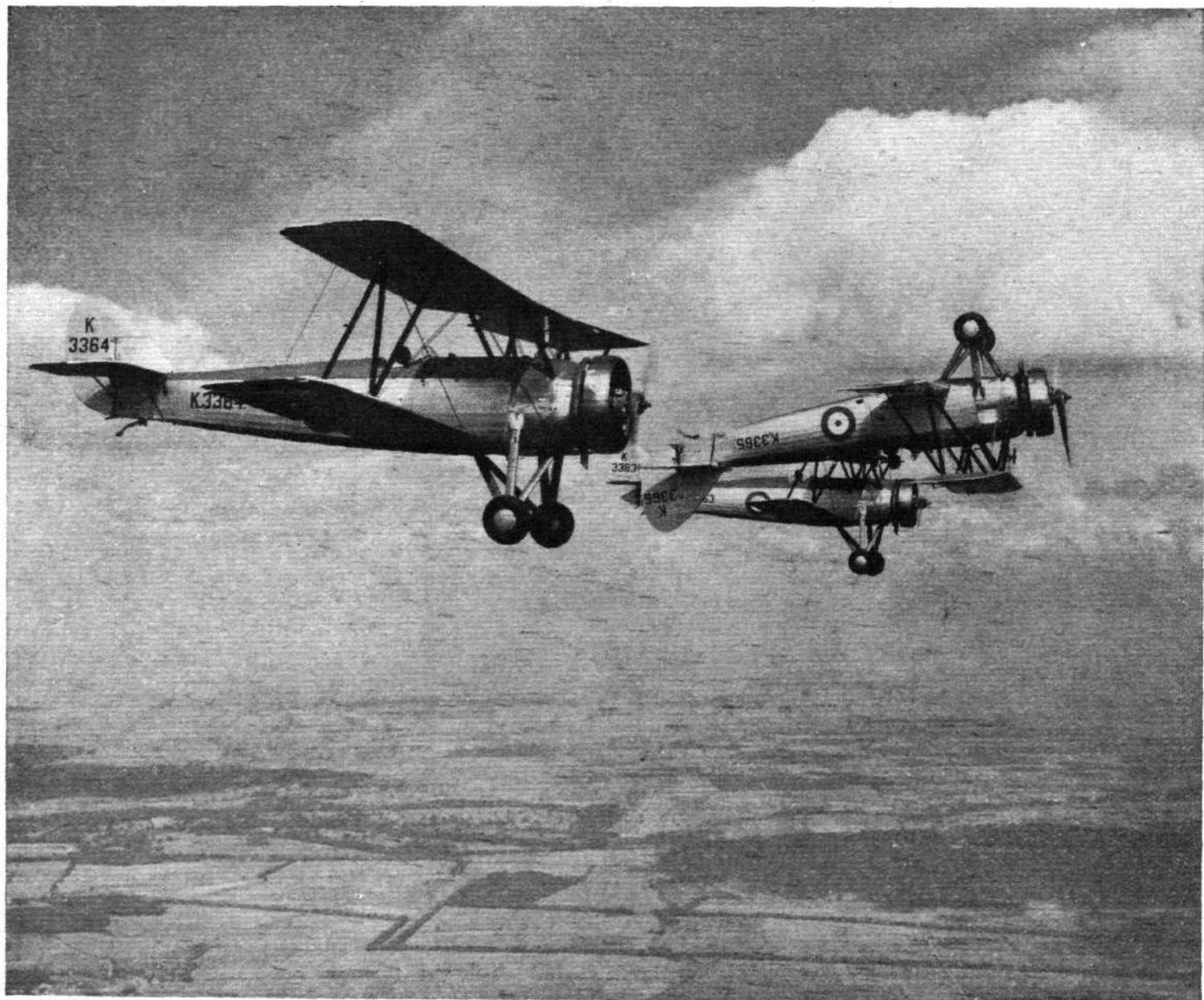
The American Way

READERS are certain to be interested by the observations of Lieut.-Comr. Colson, of the staff of *Flight*, who has recently paid a visit to the United States, and has travelled extensively over American internal and external air lines. Of late it has been the fashion in Britain to praise all American aeronautical efforts and to decry British achievements. Lieut.-Comr. Colson is able to make the position clear and to show how unjust to British air operators and to British designers much of this attitude has been. American effort is divided pretty sharply between external air lines (which means practically the Pan-American company) and internal air lines. The former is comparable in schedule times and economical standards with our Imperial Airways, whereas the internal lines work on

different principles and with different methods. The latter have concentrated on speed, and almost entirely on speed. The comfort of their machines is certainly good, but what they advertise is speed, and the competition between the various companies in cutting days or hours off the journey time between one town and another is of the keenest.

This explains why American designers have produced large passenger aeroplanes with high cruising speeds. The operating companies demanded them. Pan-American Airways and Imperial Airways put forward no such demands. Very wisely, they aimed at beating the speed of ground and sea transport by an attractive margin, and at the same time kept an eye on economical operation. Both firms are now about to speed up their schedules, but that does not condemn their early caution. The increase of speed is a matter of ordered progress.

Competition is admittedly a good thing, so far as stimulating progress goes, but it can be overdone, and in extreme cases may lead to the cutting of throats. Love of speed is part of the American temperament, but the internal air lines may prove to have been injudicious in pandering to that craving to the extent which our special correspondent has observed



A TUTORIAL TRICK. Instructors from The Central Flying School, Wittering, in special "Tutors," rehearse a phase of their inverted flying act to be given at Hendon on June 29. The rearmost machines, of course, are not in their normal attitude . . .

The Outlook

A Running Commentary on Air Topics

Monoplane or Biplane?

ALMOST from the earliest days of flying opinions have been divided concerning the relative merits of the biplane and the monoplane type of aeroplane. Of recent years there has been a noticeable tendency among British designers of light aeroplanes to turn to the monoplane, and more particularly to the low-wing monoplane, which has the advantage that the undercarriage can readily be retracted into the wing, or if a fixed undercarriage is fitted it need be but a very short one, owing to the proximity of the wing to the ground.

That the monoplane is not to have it all its own way is indicated by the introduction of the new De Havilland "Hornet Moth" described in this issue. This machine is a wire-braced biplane two-seater, and it is natural to ask why, among so many monoplanes, this firm should have decided upon the biplane. Probably the answer to that question is to be found in the fact that comfort rather than speed was aimed at. In other words, the "Hornet Moth" is as near as possible the "motor car of the air." Intended to be capable of operating from small aerodromes, fields, and so forth, so as to enable the owner to make extensive use of his machine, a type having a short take-off run and low landing speed was desirable. At the same time small overall dimensions are attractive from several points of view, not least when it comes to housing. All these various considerations pointed towards low wing loading, and for a given set of overall dimensions this is most readily attained with the biplane type.

Light or Darkness?

AMERICAN air-line machines are flown day by day over vast stretches of country, often over cloud, and frequently the pilot sees very little of the country below him—and the wretched passenger, if he or she is in a low wing monoplane, sees even less. The pilot flies mainly on the radio beacons which are placed at the major airports. Admittedly, the radio beacon is subject to disturbances and is not quite so infallible as it has been painted, but the pilots arrive, nevertheless. Why, therefore, should enormous sums be spent on putting down beacon lights at close intervals along the routes? These are said to have cost the American Government over 49,000,000 dollars, yet they can only be useful for an average of nine hours out of the twenty-four during which American domestic lines operate; and during that short time the aircraft are often above the clouds—flying in exactly the same circumstances as they are for the remaining fifteen hours of their time!

Lunching in Africa

BY his splendid flight to Oran and back last Monday Capt. E. W. Percival has drawn attention to the almost limitless possibilities of the modern fast light aeroplane. Leaving London at 1.30 a.m., he reached Oran, on the coast of North Africa, spent some hours there, and was back in London before 6.30 the same evening. It is not suggested that the average owner-pilot would habitually make flights of such length in one day, and Capt. Percival's "Gull" was, of course, fitted with extra petrol tanks to enable him to make the outward and homeward flights non-stop; but even the standard "Gull," carrying pilot and two passengers, could have made the journeys with one or at the most two stops during each.

Perhaps the best picture of what such a flight means is obtained by remembering that on several of the cross-

Channel routes it takes as long to travel from London to Paris as it took Capt. Percival to reach Oran! With modern reliable engines such as the "Gipsy Six" fitted in the "Gull," the risk of sudden forced landings is very small, and the ordinary aerial tourist might possibly prefer to reduce it still farther by taking a rather more westerly route, thereby reducing the length of the sea crossing from Spain to Africa. Without crossing large stretches of water, and by remaining in Europe, there are many places within a day's flight of London well worth visiting. The regulations that have to be observed are slightly annoying, but even these can, with the aid of the Royal Aero Club and the A.A., be reduced to manageable proportions.

A Matter of Demand

AT the present time a great deal of publicity is being given to the large American flying-boats, and we have heard it said that England is a long way behind America because we have no similar boats. It does not appear to be realised that the American manufacturers built those boats because Pan American asked for them and was prepared to pay for them; the type was what they wanted for solving their particular problems. Our problems are different, and consequently there has not been a demand for that type—any more than there has been one for large high-speed twin-engined land aeroplanes.

We have no hesitation in saying that any operator who went to any one of our well-known flying-boat designers and asked for boats to be built on the same terms as those which Pan American laid before their designers would get what he wanted; and it would be every bit as good as those American boats. British designers can produce speed—if they are asked for it. They have done so on every occasion when there has been a demand, as, for example, during the Schneider Trophy contests or the Melbourne Race; but they must have money to build machines, and if nobody wants to buy them, then they naturally don't produce them. However, large boats are now being built and even larger plans are on the drawing board.

Standard Equipment

SINCE cars were once sold at a great price without a shred of general equipment, and are now sold—at a low one—with everything from traffic indicators to radio sets, one cannot help wondering what features of equipment will be considered as standard in the private machine of the future.

Looking forward to a millennium in which all aerodromes of importance in this country will be equipped with floodlights; in which the private owner is still permitted to fly; and in which radio assistance can be given without interfering with serious air transport, it is still difficult to imagine that *every* private owner will wish to fly at night. Head lights and navigation lights, therefore, may still be "extras."

A built-in compass and possibly a built-in drift sight which does not require elaborate calculations should be standard to-day, but short-wave radio and the homing device are still in a state of development.

Blind flying instruments, compulsory fittings now in the case of transport machines carrying more than five persons, including the crew, will probably be a *sine qua non*, but it would be difficult to be sure that these would be similar to those at present in use. Probably a self-contained instrument of an insensitive and easily followed type would be best for such occasional uses as those to which the private owner would put it.

A MODERN CARPETBAGGER

Being a Brief Account of How a Member of the Staff of "Flight" Covered Most of the United States of America and All Central America, as Well as a Large Portion of the West Indies, in Fourteen Days

By C. N. COLSON

AMERICANS who travel in their own country want speed, then more speed, and, if you give them the chance, still more speed. The air transport operators sell speed first and last; they compete with each other on a basis of speed.

Conditions are very different from those in Europe. In the States they have large distances over which the air lines are in direct competition with highly organised and fast surface transport; they have one monetary system; they are, throughout their whole journey, in the same country; their communication systems are in the same language; and, in fact, there are innumerable things which make life easier for their air transport companies than it is for, say, Imperial Airways. It is these conditions which to a very large extent account for the differences in equipment and general operating policy. Pan-American Airways system, however, operating as it does only outside the U.S.A., bears a very strong resemblance to Imperial Airways, and its problems are in many respects similar.

Bearing all this in mind it was only natural that I looked forward to an intensely interesting time when it was decided that I should go over the Atlantic and see for myself just what the much-advertised American airways had to offer. I had heard a great deal about American hustle, so I decided that the best thing I could do in the limited time at my disposal would be to cover as much ground as I could, not only with the idea of proving that Englishmen can also hustle around, but also in order that I might get as clear and wide a picture of their air transport system as possible.

I only had fourteen days, but in that time I flew from New York to Los Angeles and back to Fort Worth in Texas, then up to Chicago via St. Louis and through Detroit back to New York. Next, I made a round trip to see how the flying-boat problems are being tackled, and to study internal routes over mountainous country; this took me down the east coast to Miami, from there to San Juan in Porto Rico and back, then across the Caribbean Sea via



(Above) Pan-America's idea of what a flying boat terminal should be. Here, at Dinner Key, Miami, four flying boats can be loaded simultaneously. A Sikorsky S.40 and a Consolidated "Commodore" are alongside the piers on the left. On the right can be seen the beaching platform which runs down on rails into the water and, when drawn up, lifts out the flying boat. (Left) The Brazilian Clipper (Sikorsky S.42) off Honolulu during a trans-Pacific flight.



Havana, in Cuba, and Kingston (Jamaica) to Barranquilla in Colombia. Continuing over many more miles of ocean, I reached the Canal Zone at Cristobal. Thence I went back to the land and made my way right through Central America, traversing Costa Rica, Nicaragua, Honduras, San Salvador, Guatemala, Mexico (Tapachula, Vera Cruz, Mexico City, Tampico), and finally to Brownsville. Here I was back in the States and in one night got back to New York *via* Fort Worth, Cincinnati, and Cleveland.

This journey of nearly 16,000 miles could have been made in a shorter time, I have no doubt, but I had to see the air-line officials whenever we stopped, and get quite a lot of work done in one way and another; thus, even so, it entailed a large amount of night flying.

I don't claim that my experiences were even indicative

of the speed of American air transport as compared with that of air transport in other countries, but they certainly did show what air transport, as such, can enable a traveller to do.

Later on I hope to be able to give some details of the points of interest which struck me as I passed through the many countries, seeing not only the varied scenery but also the different attitudes of the various peoples to flying.

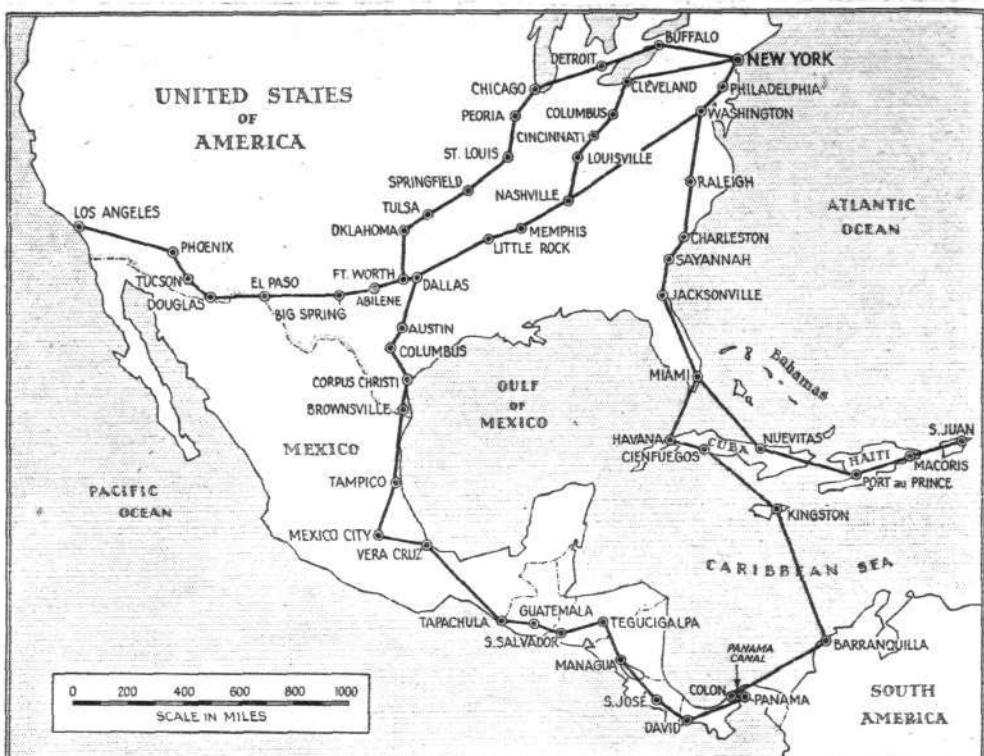
The first stage, to Fort Worth, I made in a Douglas D.C.2 of American Airlines—a quiet, most comfortable aeroplane with admirable seats which can be adjusted in all sorts of directions. As a matter of fact, it was a foul trip, very rough and through severe thunder and lightning—electrical discharges from the wing tips, and

The 15,677-mile route covered by the author in various types of commercial aircraft.

all that sort of thing—but at least it proved to me that the Douglas D.C.2 is as good in bad conditions as in fair weather. From Fort Worth to Los Angeles I made my first assay of going to bed in the air. I don't take kindly to the idea of sleeping while flying—I doubt if anyone who flies himself ever does—but I was agreeably surprised. The bunks in the Curtiss Condor are wider than those in most railroad cars and amply long. Everything is very comfortable, and a petite little stewardess brings you the inevitable orange juice in the morning; even shaving is quite easy and a supply of hot water is carried.

I came back to Fort Worth by the same machine, and after some breakfast went on to Chicago by one of the new single-engined Vultees. This was also very quiet and comfortable. Some may question the wisdom of long-distance passenger flying in single-engined aeroplanes, but the fact remains that statistics show that almost all crashes due to engine failure have occurred during the take-off and not during steady flight; and with only one engine the chances of an engine stopping are at their lowest possible figure! The American Department of Commerce will allow their use only over certain routes where the terrain is flat and where, presumably, they consider a forced landing could be made with reasonable safety. Cruising at 190 m.p.h. with the Wright Cyclone engine throttled back so that it is only giving 425 h.p., and carrying eight passengers, the Vultee must be an extremely economical proposition on any basis.

From Chicago to New York I again flew in a Douglas D.C.2. Here I was not quite so lucky. In America they don't allot you a definite seat in the machine, so you have to tip a porter to keep any special one you want or else push till you get in first and can grab it. I wanted to see the country over which I was flying, and in the Douglas, as in most large low-wing monoplanes, the only seats from which anything can be seen are the rear ones, so I always tried to get one of them; but here I failed, and all I could do was to sketch the lines of stress where the wing surface wrinkled when we hit a bump!



Down to Miami I again took a Douglas, but this time I went by night and had the doubtful pleasure of sitting in a chair all night during the 1,196 miles. I shan't do it again unless there's no other way. It's true that the seats can be adjusted so that the occupant can recline, but the truly horizontal is the only position in which I like parking my body. This was by Eastern Air Lines, and in this connection there is one rather serious snag. If you book through from New York for a trip over Pan American Airways system they book your journey to Miami, the Pan American terminal, by Eastern Air Lines. If you are travelling more than 2,000 miles, Pan American allow you 55lb. of luggage free, but if you take that amount on the first part of your journey by Eastern Air Lines you have to pay excess for everything over 35lb.—no small item when travelling by air. There certainly ought to be some working agreement between these two companies.

From Miami, which is one of the most workmanlike—and seamanlike—stations I have ever seen, Pan American run their Caribbean Division. In their workshops and divisional headquarters here I spent the rest of the day.

(To be continued.)



(Left) A view showing twelve of the fourteen passengers inside a standard Douglas D.C.2. as used by the majority of America's air transport companies. (Right) These large, comfortable berths make it easy to sleep while flying at night in a Curtiss "Condor" on American Airlines.



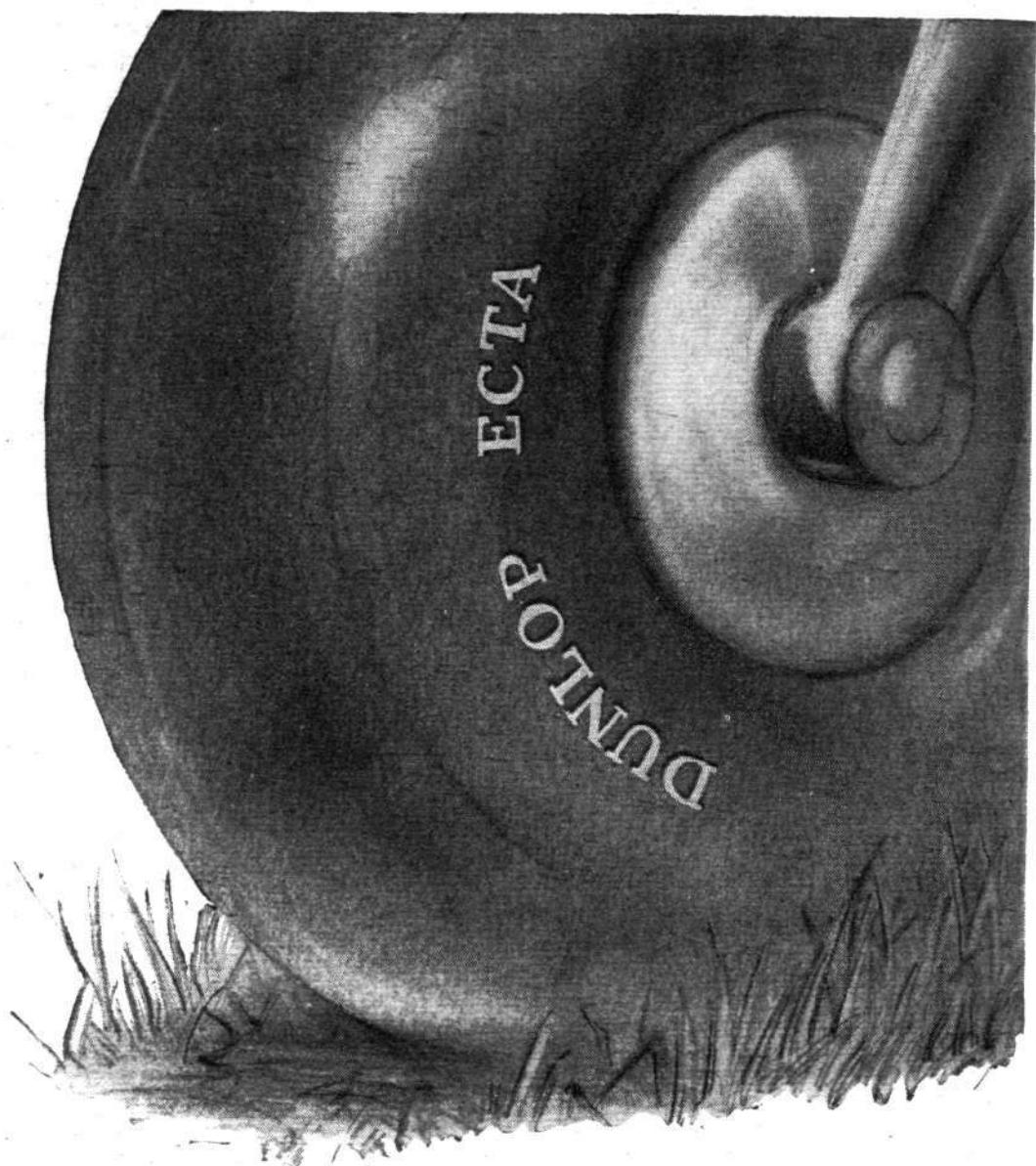
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THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

Pilots Win at Le Mans

Both Luis Fontes and John Hindmarsh, who together won the Grand Prix d'Endurance at Le Mans in a Lagonda, are well known in the flying world. Mr. Fontes flies regularly at Reading aerodrome and is having a special Miles "Hawk" built for the King's Cup Race, while Mr. Hindmarsh is a Hawker test pilot.

Impressive Hendon Visitor

The Short "Sarafand"—Britain's largest flying-boat, the first description of which appeared in last week's issue of *Flight*—is to lead the fly-past of marine aircraft at the Hendon Display on Saturday week.

Mr. Brook's New Venture

It is reported that Mr. H. L. Brook is to make an attempt, in the early autumn, on Mrs. Mollison's England-Capetown "record." Taking the longer East coast route, he will fly the Miles "Falcon" in which he made his recent Australia-England flight in 7 days 19 hours.

Crank

A competition for pedal-driven aeroplanes is to be held near Paris. The competitors will be allowed fifteen minutes in which to develop power for the take-off, so presumably flywheels or similar energy-storing means will be employed.

Over the Andes

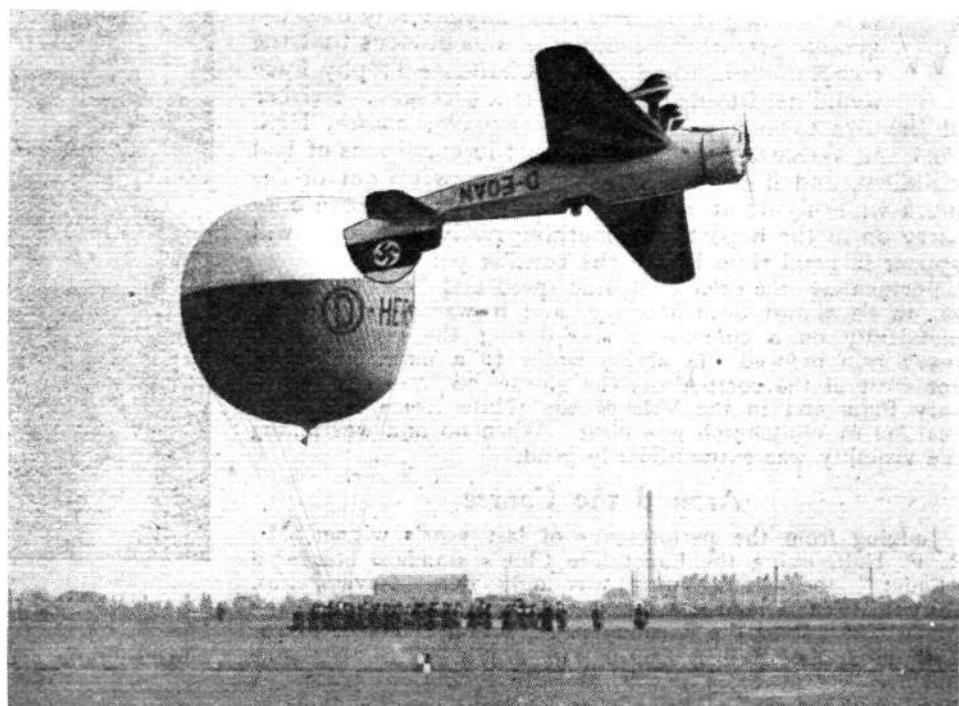
Flying a D.H. "Fox Moth" (130 h.p. "Gipsy Major"), Mr. C. Abbott, a member of the Shell Company's staff in Argentina, recently made a remarkable flight over the Andes, from Mendoza to Santiago de Chile and back. Flying at 14,200 ft., he made the outward 186-mile journey in 130 minutes, and returned in two hours at 13,000 ft.

A. and M.

The Anzani-engined monoplane on which Bleriot made the first Channel crossing, together with a 1913 Farman F.40 biplane (Anzani), were demonstrated at the recent "Fêtes de l'Air" at Villacoublay, Versailles—the French equivalent of our Hendon Display. By way of contrast, a Caudron "Rafale," capable of 187 m.p.h., accompanied them. The night-flying display which formed part of the programme was abandoned owing to rain after three items had been performed.

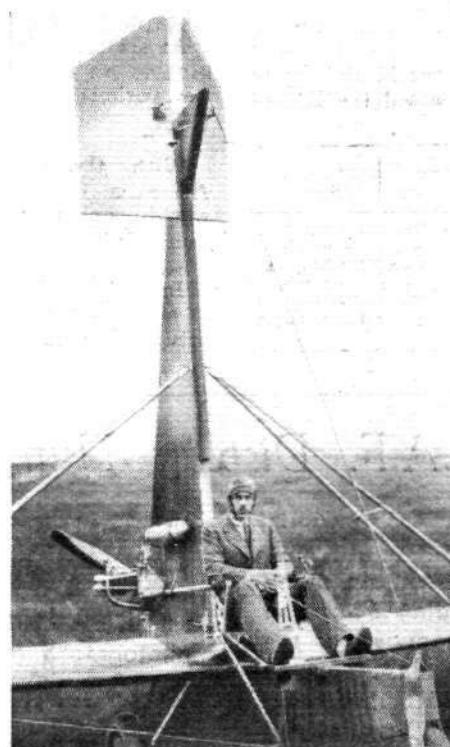
The Piccard Gondola

Professor Piccard attended the formal presentation of his 1932 stratosphere balloon gondola to the Science Museum, South Kensington, on Wednesday of last week. Others who were present at the ceremony included the Belgian Ambas-



BALLOONACY: Flying a Messerschmitt monoplane, Herr Stör, the German stunt pilot, entertained the Deutschlandflug spectators by a display of low-altitude inverted flying. A balloon-bursting competition might have enhanced the effect.

sador, M. Willems (Director, Fonds National de la Recherche Scientifique), and Col. E. E. B. Mackintosh, Director of the Science Museum.



TAILS UP! This weird machine, built in France by the Vicomte Charles de Rougé, is claimed to have helicopter-like qualities. The tail surfaces appear to be hinged and to give longitudinal control.

Russia in the F.A.I.

Next September, it is reported, Soviet Russia is to become a member of the International Aeronautical Federation, so that her records may be officially recognised.

To Be or Not to Be?

A motion to prohibit Sunday flying at Doncaster aerodrome has been defeated. The minute of the Council in Committee on which the question was debated was couched in the following terms:—"It was resolved not to recommend that pleasure flights and club instruction flying be not allowed from Doncaster aerodrome on Sundays."

Twenty-five Years Ago

From "Flight" of June 18, 1910.
"At a banquet given by Mr. Glenn Curtiss it was announced that Mr. Edwin Gould would offer a prize of \$15,000 to the inventor of the best aeroplane fitted with two motors, the idea being to encourage inventors to equip their machines with reserve power."

Opposed

The Municipal Aerodrome Committee of Leicester City Council has rejected a proposal to establish at Braunstone an R.A.F. civilian flying school under the expansion scheme. It is explained that the opposition is not on grounds of pacifism, but for the reason that air services would be interfered with and local residents troubled by the extra noise.

RACING IN THE RAIN

The S.B.A.C. Trophy Won by Lord Willoughby de Broke's B.A. "Eagle"

WITH blinding rainstorms lying haphazardly over the greater part of the country, it was obvious that the competitors in the S.B.A.C. Challenge Trophy Race would need to navigate with real accuracy. Neither of the two turning points in the triangular course, High Post and Witney, is easily discovered in conditions of bad visibility, and if the wrong landmark pops up out of the murk while flying at 200 feet the pilot in a race can only carry on in the hope that something really handsome will appear in good time before the turning point.

Fortunately, the calculated wind speed and direction turned out to be almost dead accurate, and it was possible to fly confidently on a compass course during the periods when heavy rain reduced the visible world to a mere ten acres. For most of the competitors the storms occurred over Salisbury Plain and in the Vale of the White Horse, while the final leg to Whitchurch was clear. When no rain was falling the visibility was extraordinarily good.

Around the Course

Judging from the performance of last year's winner, Mr. R. F. Hall, flying the Lancashire Club's standard staggered "Cadet," the handicapping was only fair. Nevertheless, Messrs. Rowarth and Dancy were not caught out, for the whole field passed the finishing point within a minute or so. Last year Mr. Hall averaged 116 m.p.h. with the same machine yet at 121.5 m.p.h. he only took third place. A member of the staff of *Flight* was acting as pseudo-navigator with Mr. Hall, and can definitely state that the "Cadet" was all out *all* the time (the A.S.I. was showing 125 m.p.h.), that it was never more than a few yards off the course, and that it was flown right on the deck.

Lord Willoughby de Broke had to average only 133 m.p.h. to win with the B.A. "Eagle," yet was handicapped to be slower than Mr. Cameron's "Leopard Moth," which, in fact, averaged 132.25 m.p.h.—exactly the same speed as that made by Lady Blanche Douglas' "Hawk Major."

At the second turning point, Witney, the order was still unchanged, but as the "Cadet" got on its course the "Eagle" could be seen, a scarlet mite on the skyline, coming in towards Witney. The machine passed the "Cadet" near Malmesbury, and the Hampshire Club's "Cirrus Moth" more or less on the finishing line. Mr. Hall then passed the Bristol Club's "Gipsy Moth," so the result was:—

Machine.	Pilot	Time Handicap.	Average Speed.
1. "Eagle" ...	Lord Willoughby de Broke	25m. 37s.	133 m.p.h.
2. "Cirrus Moth" ...	C. R. P. Curtis-Nuthall ...	0m. 0s.	94 m.p.h.
3. "Cadet" ...	R. F. Hall ...	20m. 50s.	121.5 m.p.h.
4. "Gipsy Moth" ...	R. Ashley Hall ...	6m. 18s.	100 m.p.h.
5. "Leopard Moth" ...	F. J. A. Cameron ...	27m. 32s.	132.25 m.p.h.
6. "Hawk Major" ...	Lady Blanche Douglas ...	31m. 3s.	132.25 m.p.h.



Lord Willoughby de Broke (centre) receives the S.B.A.C. Challenge Trophy from the hands of Mr. R. Ashley Hall, who, incidentally, finished fourth. On the right is Capt. L. P. Winters, the Bristol airport manager.

As it happened, Mr. Ashley Hall might possibly have scraped into third place if he had not been unlucky enough to fly right up to High Post before seeing it in the heavy rain.

Meanwhile, the watchers at Whitchurch had been treated to a series of displays by sundry pilots. Mr. Malone flew the Short "Scion," Mr. Seth Smith the Monospar S.T.10, and Mr. "Tommy" Rose the Miles "Falcon." The aerobatic display with the Bristol Club's "Cadet" was divided into two parts. Mr. L. H. Slade, the club instructor, demonstrated the kind of aerobatic flying that the pupil might reasonably try, and F/O. Washer carried out more advanced and typically display evolutions.

At six p.m. Whitchurch ceased to be a club aerodrome and became an airport when the "Dragons" and "Rapides" of the various lines came in and departed, one by one.

"Private Flying"

With the conclusion last week of his impressions of Australia from the pilot's point of view, Lord Sempill's weekly notes in the "Private Flying" section of *Flight* came to an end, though we hope to have the pleasure of publishing, from time to time, articles from his pen.

In this week's issue, on p. 667, will be found the first of a new series of notes and articles of interest and value to private owners and club members.

Two Special R.A.F. Display Numbers of FLIGHT

Thursday, June 27

NEXT week's enlarged issue will contain many features of topical interest, including articles on the work of the Royal Air Force, a review of the aircraft that will be seen at the display, a guide for visitors, and illustrations of outstanding merit. In addition there will be the regular features devoted to commercial aviation, private flying, etc.

Copies of this issue will be on sale in the enclosures at Hendon.

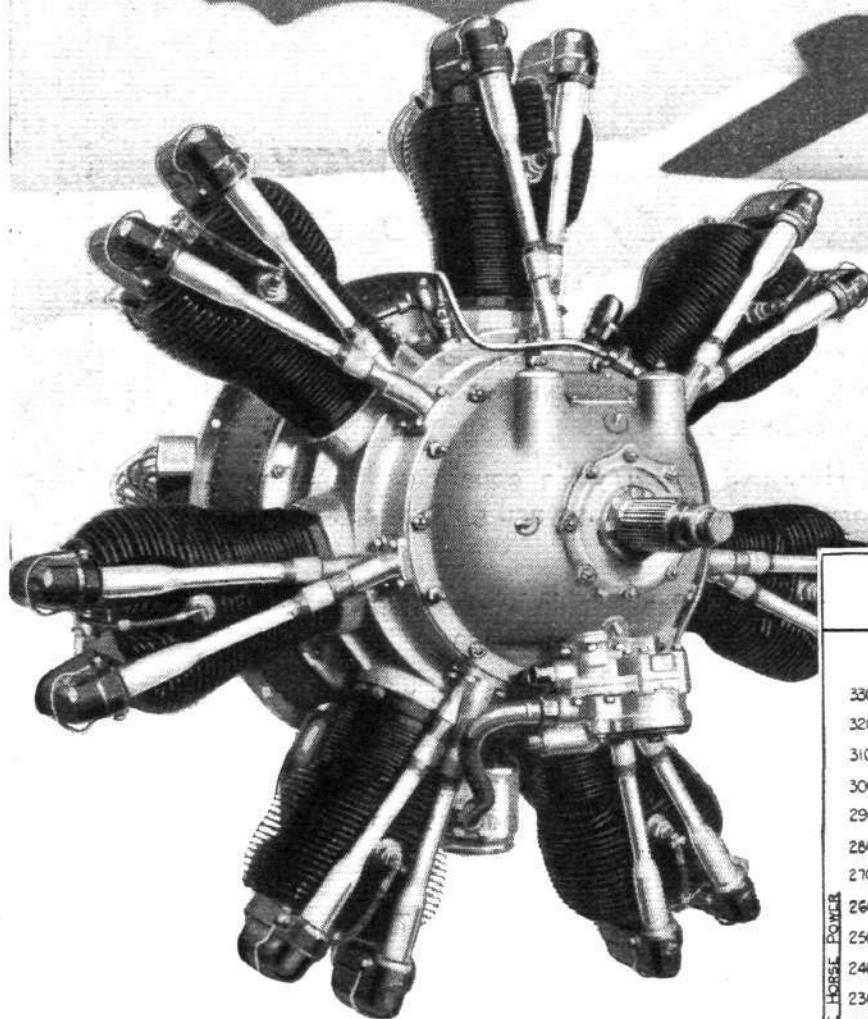
Definite orders for these special issues of "FLIGHT" should be placed with newsagents and bookstalls.

Thursday, July 4

THE second special number, this issue will contain detailed reports, illustrated by many *Flight* photographs, of the R.A.F. Display and the Display (to which the public is not admitted) organised by the Society of British Aircraft Constructors. This issue will prove of particular value to those unable to visit the displays, and both special numbers will form useful works of reference.

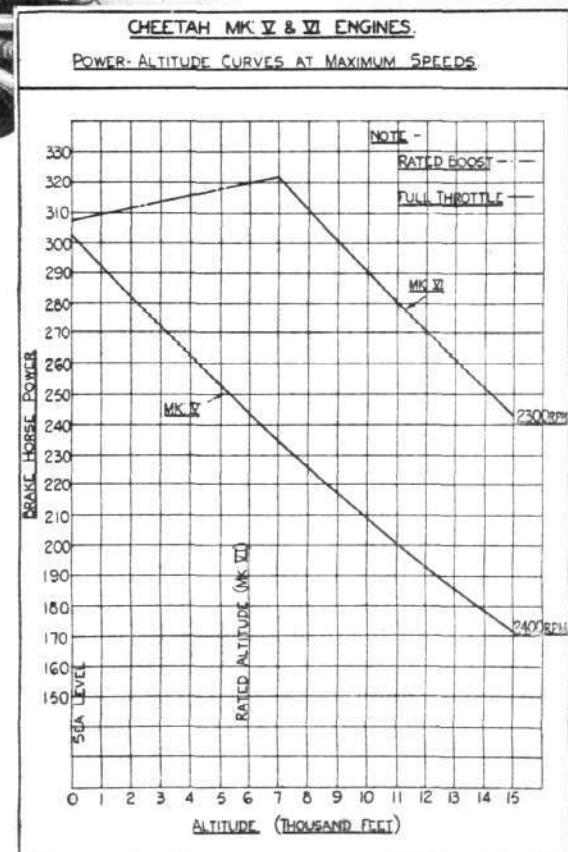
CHEETAH VI

AIRCOOLED ENGINE



PERFORMANCE DATA

	M.K.V. (P.F.)	M.K.VI. (G.F.)
Normal engine R.P.M.	- - - 2100	2100
Maximum engine R.P.M.	- - - 2400	2300
B.H.P. for take-off at sea level at normal speed	- - - 270 at full throttle	307 at max. perm. boost
Rated output at normal R.P.M.	270 at sea level	290 at 6000'
B.H.P. at maximum R.P.M.	303 at sea level	321 at 7000'
Fuel specification	- - - D.T.D. 224	D.T.D. 224
Minimum octane value	- - - 77	77



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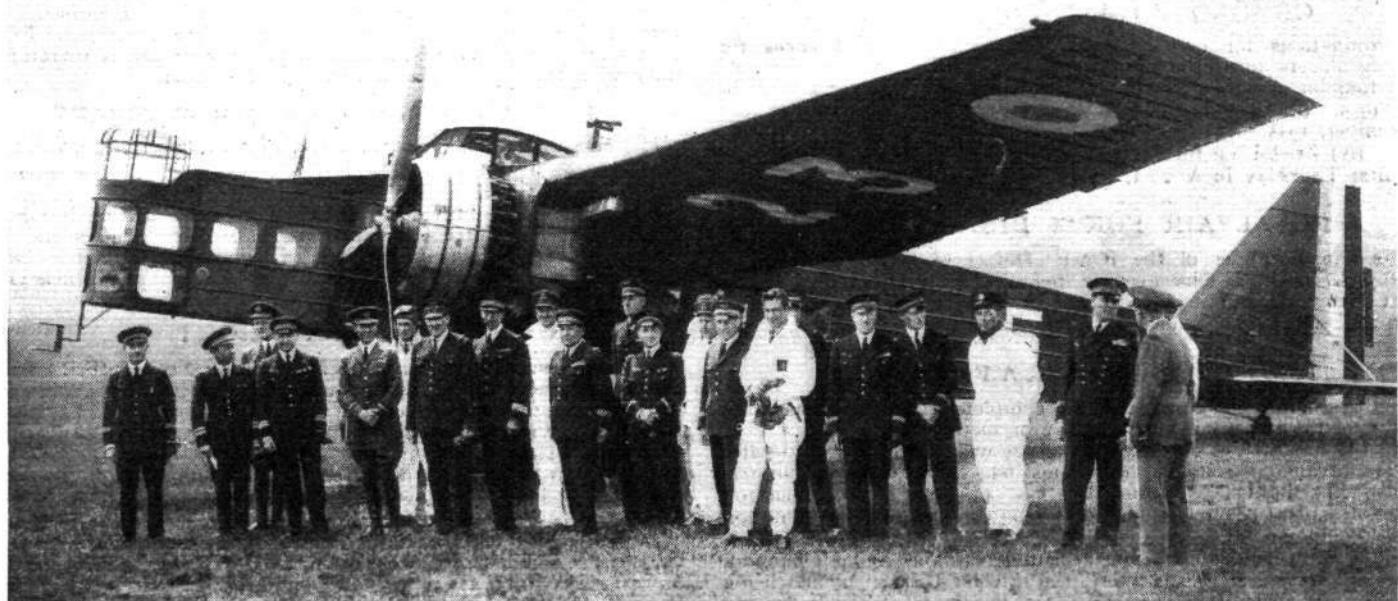
Kindly mention "Flight" when corresponding with advertisers.

THE ROYAL AIR FORCE



SERVICE NOTES AND NEWS

AIR MINISTRY ANNOUNCEMENTS



A FRENCH VISIT: Four bombers of the Marcel Bloch type arrived at Northolt on Monday on a visit to the R.A.F. Gen. R. Massenet de Marancour is in command. They were met by A. V-M. Joubert de la Ferté.

R.A.F. STATION, HENDON

The use of Hendon aerodrome by visiting service aircraft, except in the case of emergency, is restricted to aircraft the occupants of which have duties to perform at Hendon, or are proceeding on duty to London.

EXTENSION OF OFFICERS' SERVICE

The undermentioned officers have been selected for retention on the active list as indicated, in addition to those previously notified:—

PERMANENT OFFICERS

Squadron leaders—to be retained to age 48.

A. G. Bond, A.F.C.; C. Findlay, D.F.C.; C. W. Hill, P. D. Robertson, A.M.; P. C. Wood.

Flight lieutenants—to be retained to age 45.

H. K. Goode, D.S.O., D.F.C.; J. W. Lissett, K. A. Meek, M.B.E.; E. S. Moulton-Barrett, F. H. Shales.

MEDIUM SERVICE OFFICERS—SERVICE TO BE EXTENDED TO COMPLETE 11 YEARS

Flight lieutenants.

W. L. Bateman, N. R. Buckle, D. J. Harrison, A. McKee, C. Walter.

SHORT SERVICE OFFICERS—SERVICE TO BE EXTENDED TO COMPLETE 6 YEARS

Flight lieutenant.

C. H. Schofield.

Flying officers.

G. Atkinson, D. W. Baird, M. D. C. Biggie, H. G. Blair, W. E. Cameron, M. V. M. Clube, R. C. M. Collard, W. D. Dennehy, J. A. Dixon, D. L. Dustin, W. N. Elwy-Jones, D. Y. Feeny, C. D. P. Franklin, P. I. Harris, E. J. N. Heaven, G. Hinckley, A. D. Isemonger, E. V. Knowles, K. Lea-Cox, D. P. Lee, A. H. Marsack, D. H. Marsack, F. G. Mason, J. D. Miller, O. A. Morris, T. H. L. Nicholls, C. M. H. Outram, M. A. Payn, R. C. Reynell, N. P. Samuels, J. B. Sims, W. S. P. Simonds, W. J. Smail, M. Sorsbie, W. L. Stewart, H. L. Tancred, P. A. de G. Tettenborn, A. Threapleton, R. J. Twamley, C. P. Villiers, H. M. White, F. W. L. Wild, J. F. L. Zorn.

SHORT SERVICE OFFICERS—SERVICE TO BE EXTENDED TO COMPLETE 5 YEARS

Flying officers.

A. McD. Bowman, A. W. S. Matheson.

COMMISSIONS FOR AIRMEN

The undermentioned airman pilots have been granted permanent commissions in the general duties branch:—

Sgts. W. W. Loxton, D. O. Finlay, E. F. E. Barnard, N. F. Simpson, and K. G. Stodart.

No. 3 FLYING TRAINING SCHOOL

The undermentioned officers and airman pilot have been awarded special assessments as shown hereunder, in accordance with para. 377, clause 4 (a), of K.R. & A.C.I., on completion of a course of *ab initio* flying training at No. 3 Flying Training School:—

Special Distinction

Pilot Officer W. D. Woods.

Distinguished Pass

Pilot Officers J. R. MacLachlan, C. L. Dunn, A. [Pilot Officer] B. G. Morris, L. W. Saben, A. D. Murray.

Issued by the Air Ministry. Changes in tropical uniform. The changes involve a different type of jacket decoration, a white waistcoat instead of the former blue one, and, for officers of the rank of flight lieutenant to group captain, a stripe down the trouser seams consisting of gold wire lace and pale blue silk.

In the new jacket there will be no shoulder straps, and the badges of rank formerly worn on those straps will henceforth be worn as gold lace rings on the cuffs. The "wings" which mark the pilot, and which have not been worn on mess kit, will now be reproduced in miniature and worn on the left lapel. The waistcoat will be "white, of evening dress pattern with roll collar and three small buttons of the mounted eagle and crown pattern." This dress will be worn on formal occasions. The undress form will include this jacket, but will allow the old blue waistcoat and the old style of trousers without gold lace to be used.

In relation to tropical dress the regulations provide for distinctive headgear for air officers commanding. These officers will not wear the ordinary R.A.F. flash on their sun helmets, but "will wear a plume of cocks' feathers of the same shade as the plume for home pattern full-dress headdress. The feathers are to be 65 in number, 10 in. long, and are to be mounted on a gilt ornament screwed into the top of the helmet, allowing the plume to fall round the helmet about half-way down the puggaree."

AERO ENGINE—PEGASUS III

A new engine of the air-cooled radial nine-cylinder type is being introduced into the service. It is manufactured by the Bristol Aeroplane Co. and follows the general lines of the design of existing service engines of the "Pegasus" series; it has, however, a higher compression ratio and is intended for use with the new fuel of 87 octane value. The official name of the engine is "Pegasus III." The rating and other particulars are as follows:—B.H.P.—605/690 at 2,200 normal r.p.m., at 3,500 ft. altitude. Compression ratio.—6 to 1.

NEW AERODROME

As part of the R.A.F. development the Air Ministry has purchased 260 acres of land at Church Fenton, between York and Tadcaster, for building a flying school and aerodrome.

GROUND ENGINEERS' LICENCES

Examinations for civil aviation ground engineers' licences for serving officers and airmen will be held as follows:—

(i) London, weekly on each Tuesday in July, August and September, 1935. (ii) Croydon, on the second Friday in July, August and September, 1935. (iii) Manchester, on the first Friday in September, 1935. (iv) Bristol, on the first Friday in July, 1935. (v) Glasgow, on the first Thursday in August, 1935.

ROYAL AIR FORCE DINNER CLUB

The annual dinner of the R.A.F. Dinner Club will be held on Friday, 28th June (the evening before the R.A.F. Display), at the Connaught Rooms at 7.45 for 8.15 p.m. Full particulars have been sent direct to all members of the club.

RESTORATION OF R.A.F. "CUTS"

The Air Ministry announce the complete restoration, as from July 1, of the reductions made in pay on October 1, 1931.

For the majority of officers the increase will be of 2d. a day—pilot officers advancing from 14s. 4d. to 14s. 6d., flying officers from 18s. to 18s. 2d., flight lieutenants from 23s. 4d. to 23s. 6d., squadron leaders from 30s. 8d. to 30s. 10d., and wing commanders on promotion from 36s. to 36s. 2d.

Senior wing commanders and all group captains and air commodores will receive 4d. a day more, the rate for the last named being £2 18s. 4d. instead of £2 18s. Air vice-marshals, will receive £4 10s. 6d. a day instead of £4 10s.; air marshals, £5 8s. 8d. instead of £5 4s. 10d., and air chief marshals £6 6s. 8d. instead of £6 2s. 5d.

ROYAL AIR FORCE GAZETTE

London Gazette, June 11, 1935

General Duties Branch

Group Capt. P. C. Maitby, D.S.O., A.F.C., is granted the acting rank of Air Commodore (unpaid), with effect from June 7. Flt. Lt. C. V. Howes takes rank and precedence as if his appointment as Flight Lieutenant bore date Sept. 1, 1934, immediately following Flt. Lt. A. C. Watson, on the gradation list. Reduction takes effect from May 10.

Accountant Branch.

F/O. C. F. G. Rogers is placed on the half-pay list, scale B, from April 6 to May 31, both dates inclusive.

Royal Air Force Reserve

Reserve of Air Force Officers.

General Duties Branch.

Transferred from class A to class C:—Flt. Lt. E. Y. S. R. Sherman (October 27,



Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander.—R. Halley, D.F.C., A.F.C., to H.M.S. *Glorious*, for duty as Senior Air Force Officer, 1.6.35.

Squadron Leader.—C. E. H. James M.C., to Air Ministry, Department of Air Member for Personnel (D.P.S.), vice Wing Cdr. J. O. Archer, C.B.E., 1.6.35.

Flight Lieutenants.—R. H. Horniman, to Air Ministry, Department of Air Member for Research and Development (D.T.D.), 3.6.35; J. W. Hutchins, to Aeroplane and Armament Experimental Establishment, Martlesham Heath, 3.6.35; J. Marson, to No. 3 Armament Training Camp, Sutton Bridge, 3.6.35; J. H. Pool, to Home Aircraft Depot, Henlow, 3.6.35; D. W. Bayne, to No. 3 (F) Squadron, Kenley, 6.6.35.

Flying Officers.—J. A. Dobson, to No. 24 (Communications) Squadron, Hendon, 7.6.35; C. L. Monckton, to No. 24 (Communications) Squadron, Hendon, 6.6.35; R. Henson, to No. 3 Armament Training Camp, Sutton Bridge, 5.6.35; C. M. Windsor, to No. 3 Armament Training Camp, Sutton Bridge, 3.6.35; K. Gray, to School of Naval Co-operation, Lee-on-the-Solent, 3.6.35.

Stores Branch

Wing Commander.—W. B. Cushion, O.B.E., to No. 4 Stores Depot,

FLIGHT.**EGYPT'S FLYING CORPS**

King Fuad has granted the title of Miralai—Colonel—in the Egyptian Army to Sqn. Ldr. Victor H. Tait, and has promoted Sqn. Ldr. Jack Cottle to the rank of Kaimakan—Major. Both are members of the R.A.F. who have been seconded for service with the Egyptian Army.

FLYING ACCIDENT

The Air Ministry regrets to announce that F/O. Ronald Talbot Smith lost his life in an accident which occurred in Johore Straits, Singapore, on June 13, to a "Horsley" aircraft of No. 36 (Torpedo Bomber) Squadron, Singapore. F/O. Smith was the pilot and sole occupant of the aircraft.

H.M.S. "GLORIOUS"

Wing Commander Robert Halley, D.F.C., A.F.C., from the command of No. 500 (County of Kent) Squadron at Manston, has been selected as Senior Air Force Officer in H.M.S. *Glorious*. This carrier, which has been undergoing a refit and alterations at Devonport for the past year at a cost of about £435,000, is to return to duty with the Mediterranean Fleet in September.

ITALIAN SCHOOL OF AIR WARFARE

The creation is announced of a new organ of the Italian Air Force to be known as "the School of Aerial Warfare." Its headquarters are to be in Rome.

The School will provide courses for officers of the Navigation Arm of the Air Force extending up to two academic years. The "normal course," which lasts for two years, is obligatory for all Captains of the Navigation Arm, while all Lieutenant-Colonels of the same Arm must attend the "Course of higher studies."

CHINA SEA FLIGHT

The first long-distance flight to be made by No. 205 (F.B.) Squadron, Singapore, since its recent equipment with the "Singapore III" will take the form of a clockwise circuit of the South China Sea.

The two flying-boats which will make the cruise will attempt the journey to Hong Kong in two stages only. First they will fly to Kamranh Bay, Annam (French Indo-China), and then they will go on to Hong Kong, which should be reached in about 48 hours. Three nights will be spent at Hong Kong, and on June 24 the aircraft will fly to Manila, Philippine Islands, where four nights will be spent. The concluding portion of the flight, from Manila to Singapore, is to be attempted with only one stop, at Labuan, North Borneo. The aircraft are due there on June 28 and at Singapore on June 29. Air Commodore Sydney W. Smith, O.B.E., Air Officer Commanding, Far East, will accompany the flight.

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ROYAL AIR FORCE GAZETTE

1934); F/O. R. G. Hennessy, D.S.O., M.C. (Major Border Regt., R.A.R.O.) (April 19).

F/O. E. A. Turnbull is transferred from class B to class C (June 7).

Erratum

In the *Gazette* of May 14: For Pilot Officer on probation Frank Ronald Nugent read Pilot Officer on probation Frank Donald Nugent.

Erratum

In the *Gazette* of May 14. Notification concerning Pilot Officer on probation J. M. Scott. For March 14, 1935, read March 14, 1934.

Erratum

In the *Gazette* of May 14. Notification concerning F/O. G. L. S. Dawson-Damer, Viscount Carlow. For (Lt. 11th Hussars, R.A.R.O.) read (Lt. Grenadier Guards, R.A.R.O.).

INTELLIGENCE

Ruislip, 6.6.35. To command vice Sqn. Ldr. E. M. Cashmore.

Squadron Leaders.—R. D. G. Macrostie, M.B.E., to D. of E., Dept. of A.M.S.O., Air Ministry, 6.6.35; E. Meynell, D.C.M., to R.A.F. Station, Manston, 5.6.35. For Stores duties, vice Sqn. Ldr. H. E. Tansley, M.C.

Flight Lieutenants.—B. Allen, to No. 1 Stores Depot, Kidbrooke, 3.6.35; D. G. McDiarmid, to No. 2, Stores Depot, Altringham, 1.6.35; B. E. Essex, to D. of E., Dept. of A.M.S.O., Air Ministry, 6.6.35.

Flying Officers.—P. G. Bullen, to Aircraft Depot, Karachi, India, 31.5.35; G. G. N. Marshal, M.B.E., to Home Aircraft Depot, Henlow, 1.6.35.

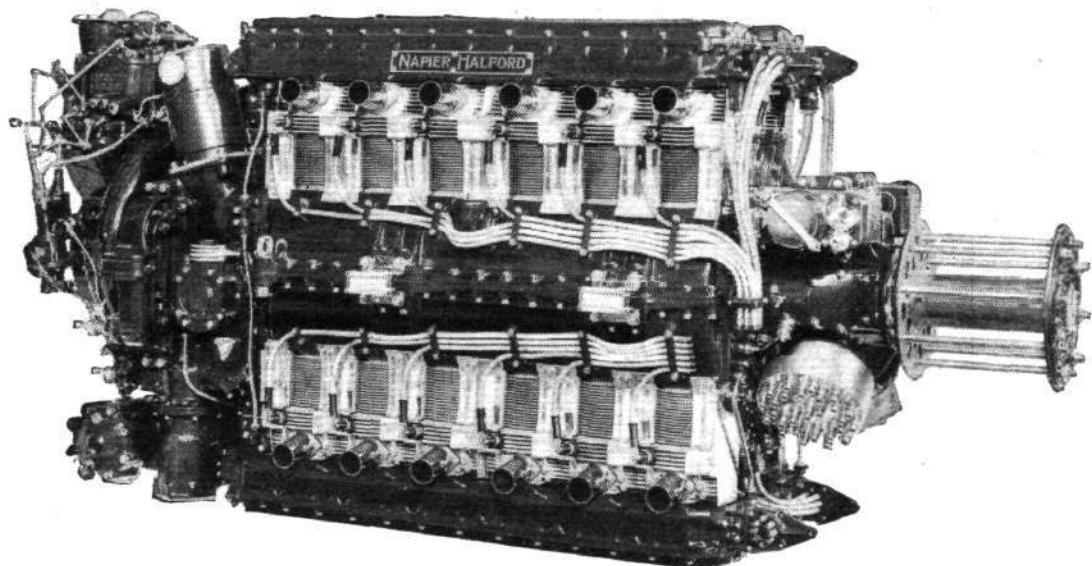
Medical Branch

Squadron Leaders.—H. W. Corner, to R.A.F. Station, Andover, 5.6.35. For duty as Medical Officer. E. Thompson, to Princess Mary's R.A.F. Hospital, Halton, 8.6.35. For duty as Medical Officer. R. L. C. Fisher, to Central Medical Establishment, London. For duty as Medical Officer with No. 2 Central Medical Board, 1.6.35. T. V. O'Brien, to Aircraft Depot, Karachi, India. For duty as Medical Officer, 31.5.35.

Flight Lieutenant.—C. Crowley, to Central Medical Establishment, 8.6.35.

Flying Officer.—J. W. Patrick, to No. 1 School of Technical Training (Apprentices), Halton, 7.6.35.

Dagger



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AFRICA AND BACK IN A DAY

17 JUNE 1935

by Capt. E. W. Percival
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MOTOR OIL

THE PRODUCT OF AN ALL-BRITISH FIRM

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AMERICA'S LATEST AMPHIBIAN

The Sikorsky S.43 : Exceptional Load Capacity and High Cruising Speed



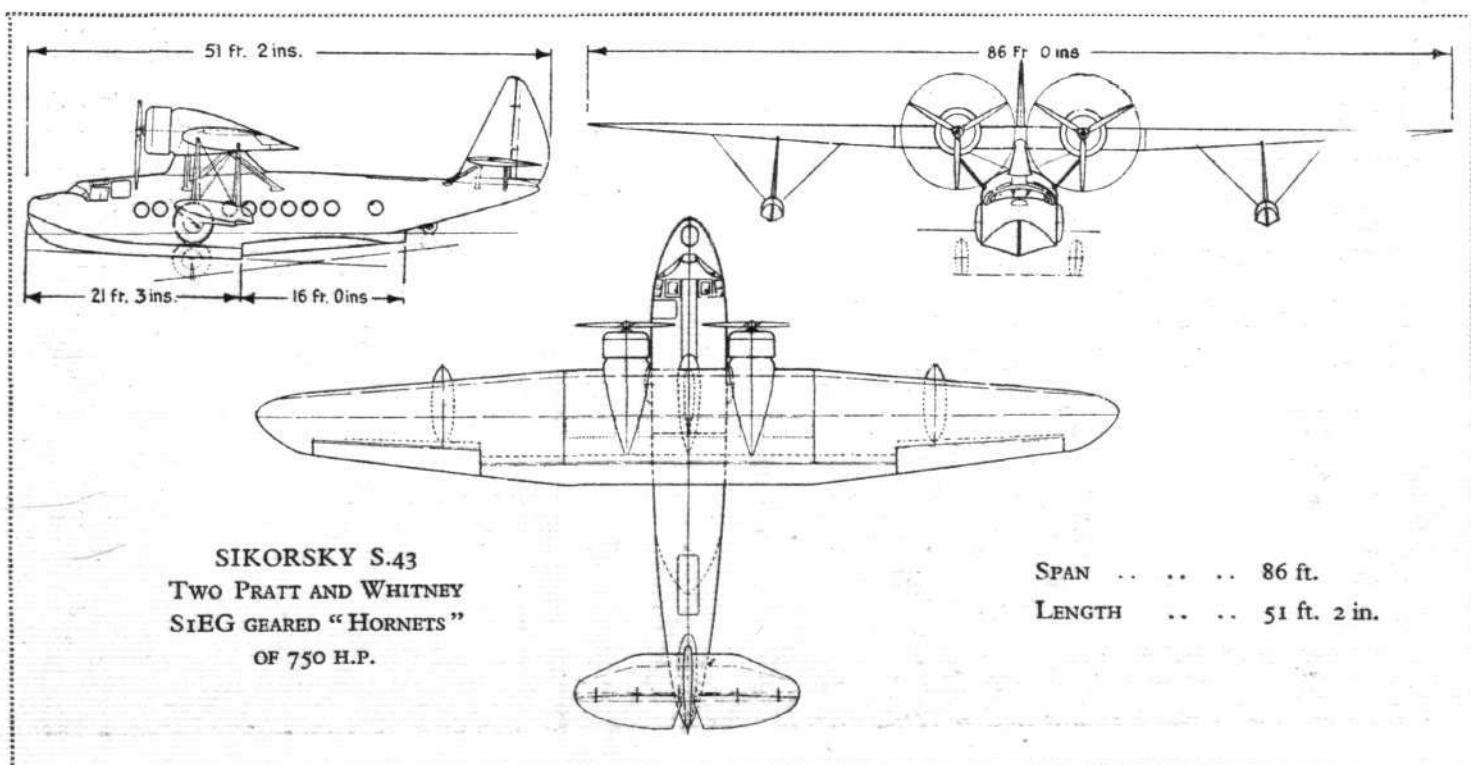
This is the first photograph taken of the new Sikorsky S.43, which, although it is an amphibian, can carry fifteen passengers and 550 lb. of mail for a distance of 1,000 miles at 165 m.p.h.

DURING a recent visit to America the writer was invited up to Bridgeport, where the Sikorsky amphibians are made. After seeing aircraft factories in most of the European countries it was particularly interesting to have an opportunity of inspecting the methods of the U.S.A.

Sikorsky's have been much in the limelight recently by virtue of the performance of their S.42, the large flying boat which has been built for Pan American Airways to use over their ocean routes. Three of these have been delivered, and seven more were to be seen under construction; incidentally, these later models will have a gross weight of 41,000 lb. instead of 39,000 lb. as hitherto, so that the ratio of gross to tare is 1.95, which means that this boat carries 95 per cent. of its own weight. With a

load capacity of this size flying begins to look as profitable as any other means of transport.

Amphibians (or perhaps my American friends would prefer amphibions) have, however, always been Igor Sikorsky's chief interest, and during my visit I saw the latest of these, the S.43, nearing completion. This aircraft has now flown and it seems very probable that the estimated figures are likely to be fully substantiated, in which case operators all over the world will undoubtedly be very interested indeed. With a ratio of gross weight to tare weight of nearly 1.7 the percentage load carried is unusually high for an amphibian. The figure, indeed, is reasonably good for a land machine, but in this case the operator will have the great advantage that his aeroplane can be used from both land and water bases.



The S.43 is roomy inside, with a standard cabin arrangement of from fifteen to twenty-five passengers and a crew of three. The power plant is two Pratt and Whitney S1EG geared "Hornet" engines of 750 h.p., which drive Hamilton Standard constant-speed airscrews.

Structurally there is very little radical departure from accepted Sikorsky practice. The wing, which tapers heavily in plan and profile, has a span of 86 ft. and a total area of 780sq. ft., giving a loading of 24.34 lb./sq. ft. Built of anodically treated duralumin, the wing is virtually of mono-spar construction in that the two spars are joined top and bottom with a flush-riveted duralumin skin to form a box, which for stress purposes is treated as a unit. Behind this spar the duralumin ribs are covered with doped fabric. The whole of the trailing edge of the wing between the ailerons forms a flap which is used for both take-off and landing, while the ailerons themselves are dropped 10 deg., without affecting the total movement, thus adding to the effective flap area. The flap is hydraulically operated, a small electric motor working the hydraulic pistons, and is returned to the neutral position automatically. The rudder is balanced by an automatic trailing-edge servo tab.

Widespread use is made of extruded light alloy sections for such parts as wing spar booms, internal struts, and stringers.

The hull is of duralumin and is anodically treated everywhere. American practice employs anodic treatment not so much for prevention of corrosion itself as to form a somewhat absorbent surface to which protective paint coverings will adhere. Much use is made of open extruded sections so that inspection is simple, and any signs of corrosion can immediately be detected.

Of semi-monocoque construction, the hull is divided into five main watertight compartments, with doors in each bulkhead. Any three of the five compartments will keep the S.43 afloat. In addition, the wing is capable of being sealed to form additional buoyancy chambers in the event of a forced landing at sea with a damaged hull.

The retractable undercarriage is very neat. It is pulled up with a form of parallelogram motion into a watertight compartment in the centre portion of the hull, and the wheels drop in recesses which leave one half of the thickness outside; but,

due to the shape of the tyre, the drag of this portion is not very large.

Among details, it is interesting to note that the large anchor is non-magnetic.

Both sides of the undercarriage are interchangeable, and may readily be removed if it is wished to operate only as a flying-boat.

Sealed ball bearings are used in most places for the controls.

Fuel is carried in riveted duralumin tanks behind each engine, and each tank has a large dump valve. Tanks and engine mountings are interchangeable. Lux CO₂ pressure fire extinguishers are fitted in each engine nacelle.

As it is a high-wing monoplane, the S.43 will appeal to passengers much more than do low-wing types, as they will be able to see the country over which they are passing.

Having a payload which should make air transport economical even with an amphibian, it may well start a new régime whereby operators running to large cities will use an amphibian for their last stage, making it possible to land in the heart of the city on the river (which always seems to be there) instead of fourteen to twenty miles outside, as is now so often necessary.

The more general use of the amphibian may also be a means of bringing the insurance rates down, due to the increased safety factor of being able to alight on either land or water.

SPECIFICATION

SPAN	...	...	...	...	...	...	...	86ft.
LENGTH	...	...	...	...	...	...	...	51ft. 2in.
BEAM OF HULL	...	...	...	...	...	...	...	7ft. 6in.
CHORD, MAX.	...	...	...	...	...	...	...	11ft. 6in.
WING AREA, TOTAL	...	...	...	...	...	...	...	780 sq. ft.
GROSS WEIGHT	...	...	...	...	...	...	...	19,000 lb.
WEIGHT, EMPTY	...	...	...	...	...	...	...	11,380 lb.
POWER LOADING	...	...	...	...	...	...	...	12.67 lb./h.p.
WING LOADING	...	...	...	...	...	...	...	24.34 lb./sq. ft.
CRUISING SPEED, 70% H.P. AT 1,000 FT.	...	...	...	...	...	...	...	165 m.p.h.
CRUISING SPEED, 75% H.P. AT 8,000 FT.	...	...	...	...	...	...	...	181 m.p.h.
TOP SPEED, 7,000 FT.	...	...	...	...	...	...	...	200 m.p.h.
STALLING SPEED, SEA LEVEL	...	...	...	...	...	...	...	65 m.p.h.
TOP SPEED, ONE ENGINE, 7,000 FT.	...	...	...	...	...	...	...	125 m.p.h.
INITIAL RATE OF CLIMB	...	...	...	...	...	...	...	1,250 ft./min.

"THE GULL'S WAY"

To Africa and Back in a Day

AT 1.30 last Monday morning Capt. E W Percival took off from Gravesend in a 1935 model Percival "Gull" fitted with a 200 h.p. D.H. "Gipsy Six" engine and carrying extra tankage in the cabin—which normally, of course, seats three persons. He flew to Africa, lunched with friends in Oran, secured an order for a "Gull," and landed at Croydon a little late for tea—which means that he was away rather less than seventeen hours. Actually he landed at Croydon at 6.20 p.m.

The object of the trip was, according to Capt. Percival, simply to show how a light British aeroplane costing only as much as a good motor car can go to Africa and back in a day. Had the flight been made with "three up" it would

have taken about an hour longer, as one stop for refuelling would have been necessary in each direction. The average speed for the outward trip was 160 m.p.h. (the advertised maximum for the "Gipsy-Six Gull" is just over 170 m.p.h.) and the homeward flight was made at 156 m.p.h.

Soon after sunrise peaks of the Pyrenees were sighted and on reaching the African coast Capt. Percival found himself only half a mile from Oran. On the way back he saw little of the Mediterranean because of clouds. The weather cleared over Spain but thickened between the Pyrenees and Tours. The Channel was crossed at 800 feet.

And the mental strain, says Capt. Percival, was less than he would have experienced driving a car to Manchester.



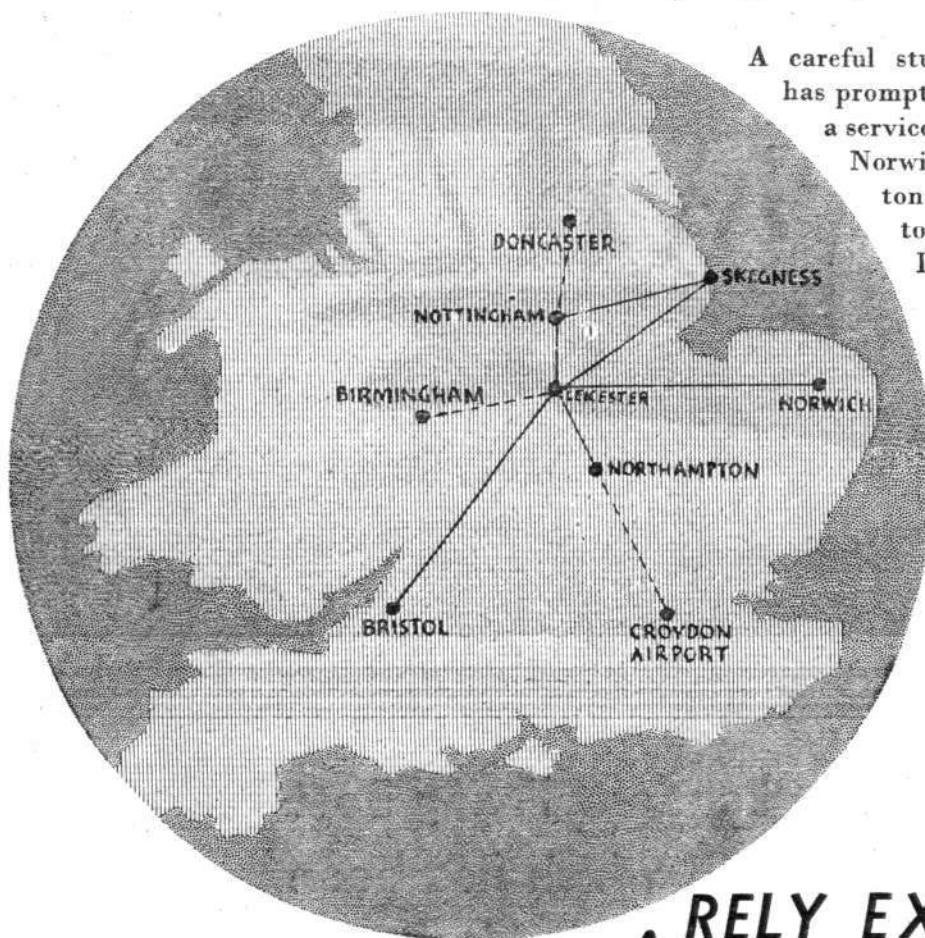
Capt. Percival leaving Gravesend at 1.30 a.m. He reached Oran at 8.40 a.m., left at 11 a.m., and reached Croydon at 6.20 p.m.

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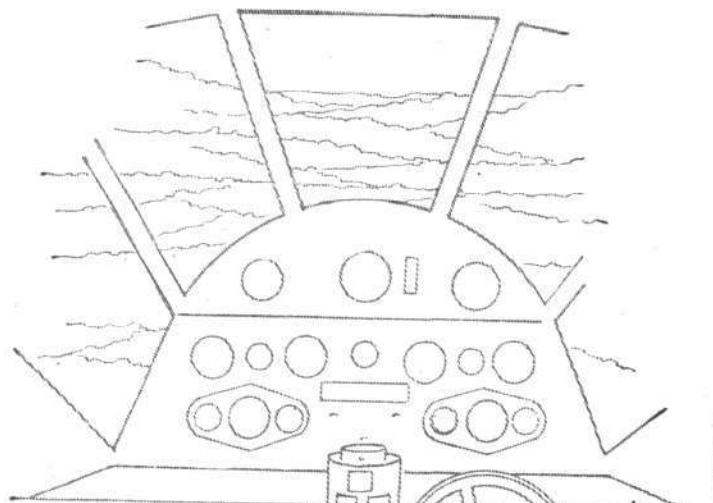
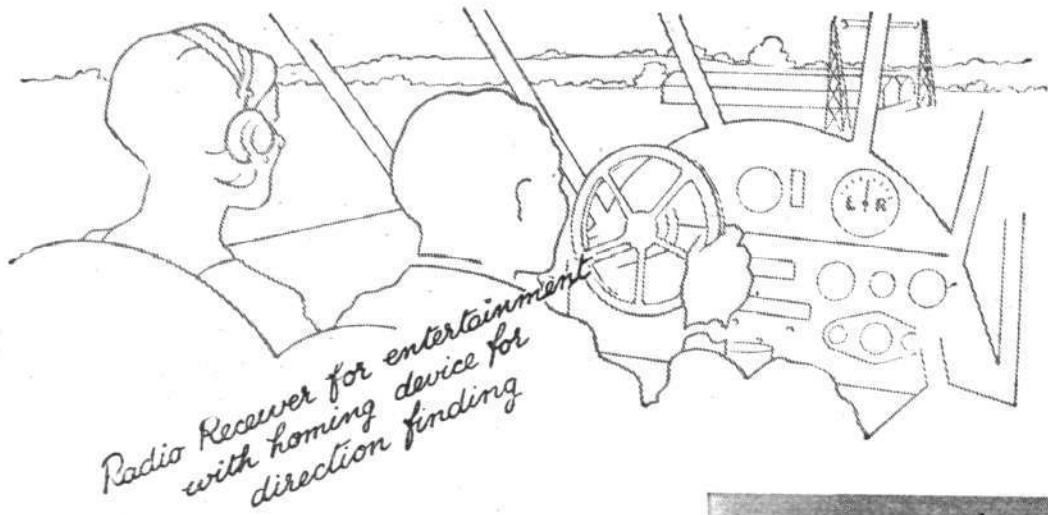
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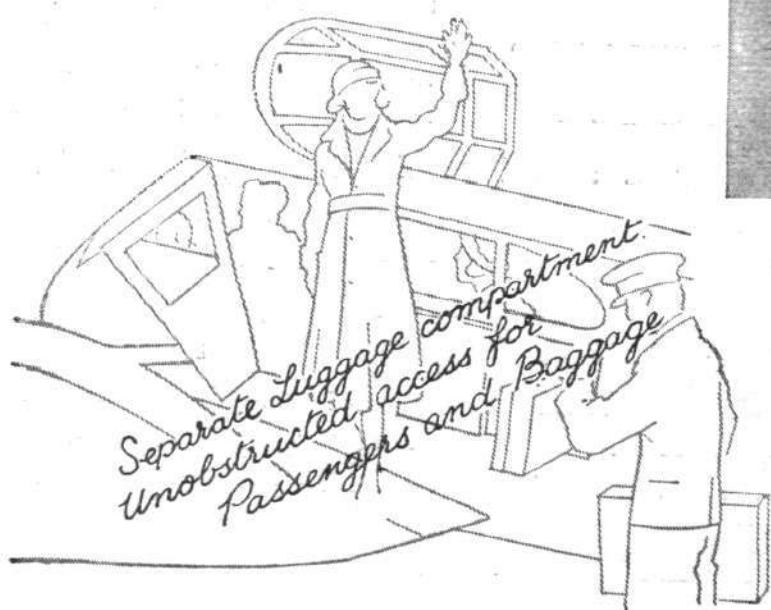
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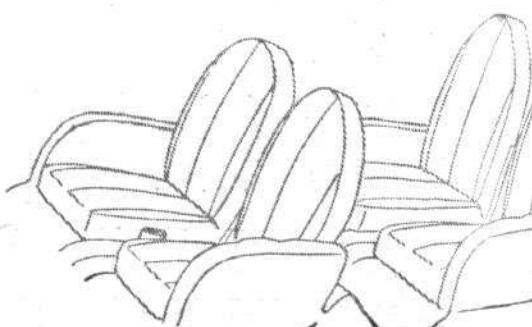
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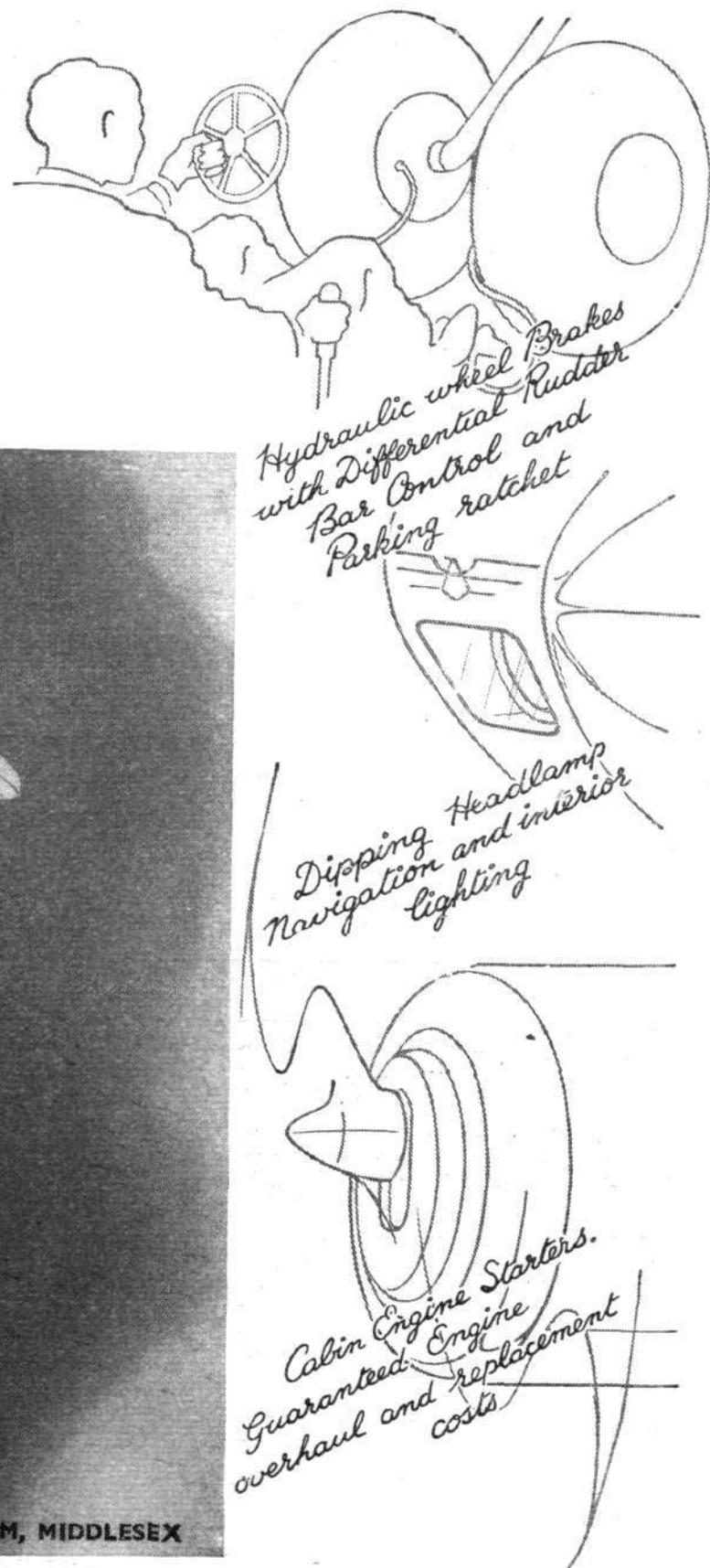
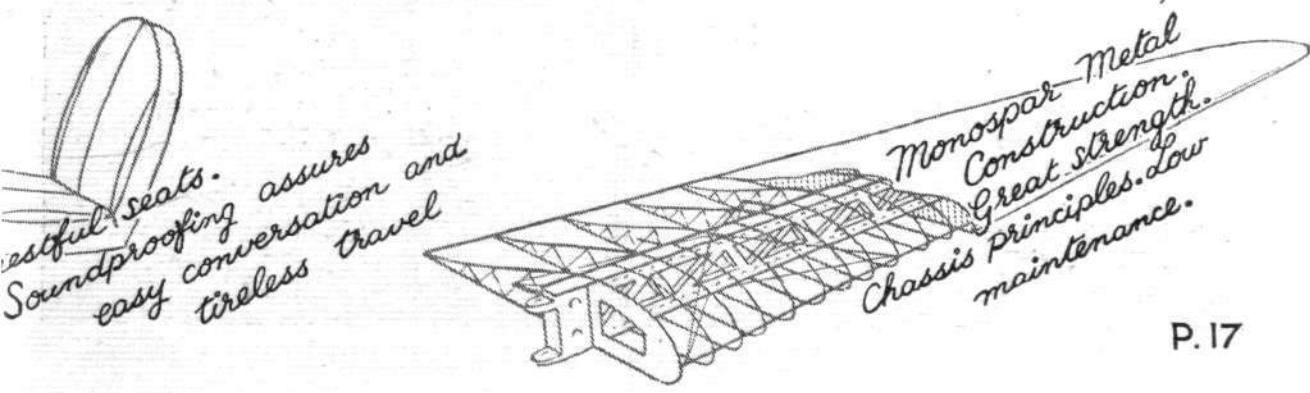
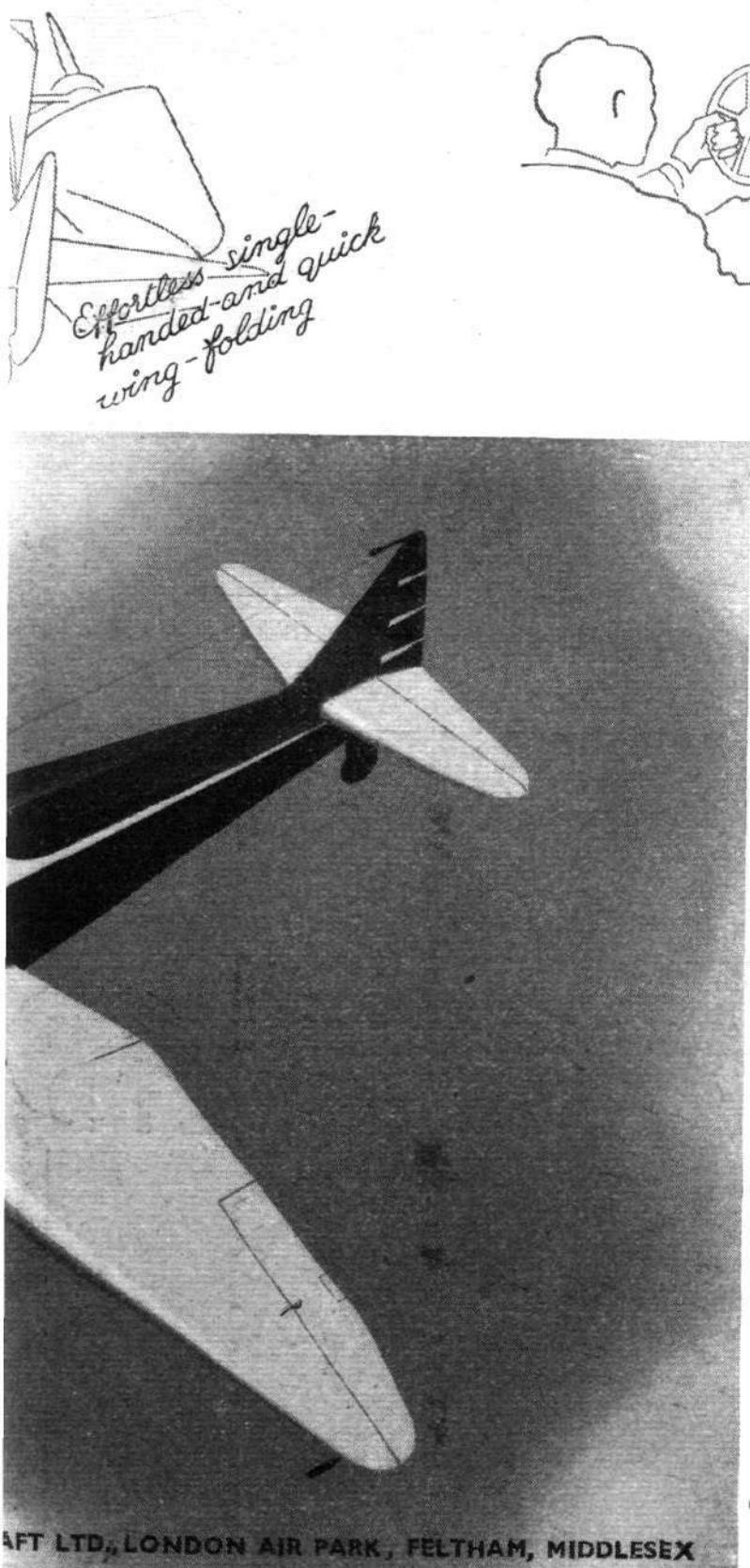


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HUGH OSWALD SHORT, F.R.Ae.S. (Chairman, Short Brothers (Rochester & Bedford) Limited).

ARTHUR GOUGE, B.Sc., F.R.Ae.S. (Director, General Manager and Chief Designer, Short Brothers (Rochester & Bedford) Limited).

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On the 31st March, 1935, the date as from which its business is being acquired, the Vendor Company had on hand or has since obtained firm orders for 56 engines, and a provisional order for a further 100 engines, of which 6 have been delivered and 36 are scheduled for delivery before 10th August next.

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The total consideration payable to Short Brothers (Rochester & Bedford) Limited, with the exception of not more than £1,000 for stock of raw materials and the like, is to be entirely satisfied by the allotment of shares.

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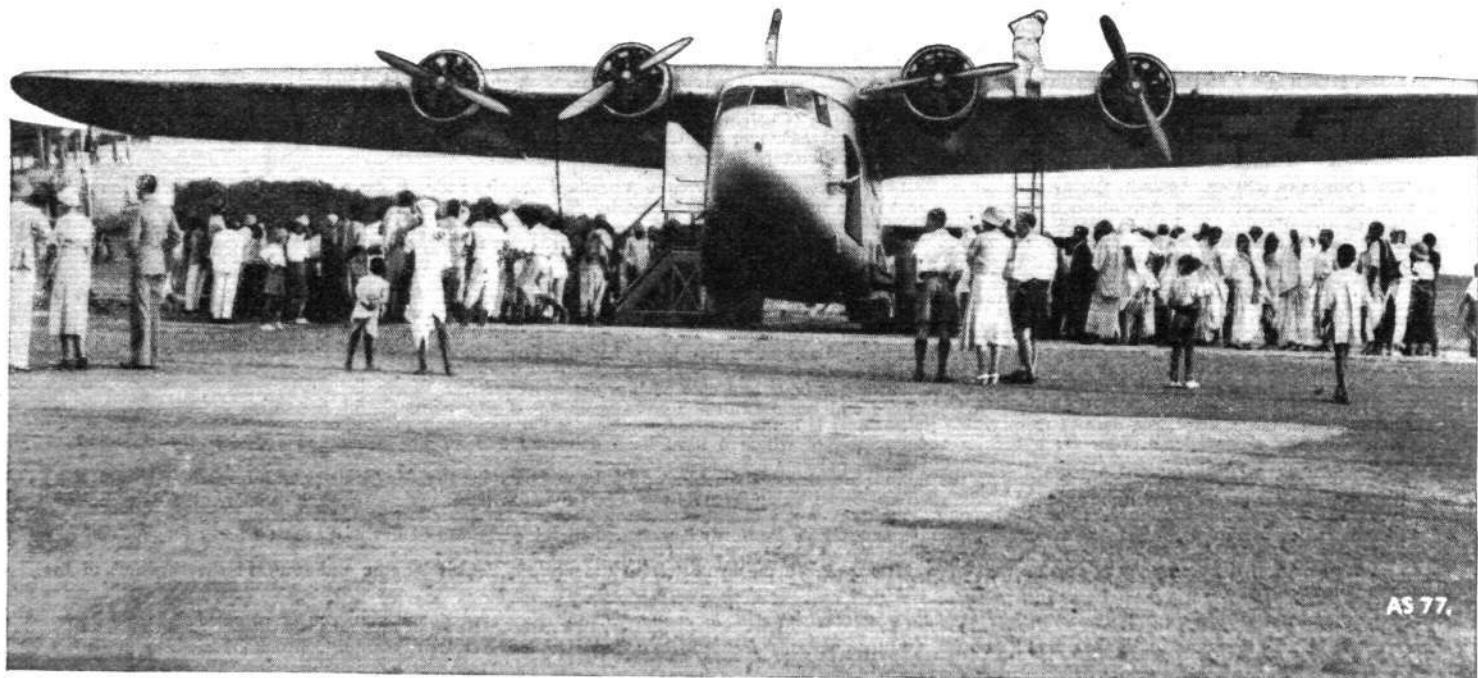
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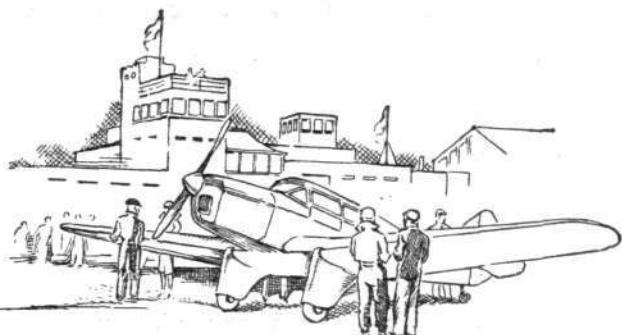


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PRIVATE FLYING



TOPICS of the DAY

Ownership Figures

YEAR by year since the appearance of the first private owner's type the number of owners has mounted—but increasingly slowly since the mid-period increase.

Dozens of reasons have been produced to explain the comparatively sluggish expansion. First the fact that aerodromes and suitable landing grounds were few and far between; then the high cost, which has been conclusively proved to be not nearly as high as the groundlings would have us imagine; and, finally, the alleged difficulty and danger involved in the actual control of an aeroplane.

The number of aerodromes is increasing much more rapidly, in proportion, than the number of owners, and the A.A. list of landing grounds is more than surprisingly large. A new generation is arising to take the place of those who could afford to fly but who prefer to remain on solid ground. The present-day machine is both safe and reliable if carefully handled and maintained, and the difficulties and dangers appear to the pilot to be a great deal less than those involved in high-speed private transport on the roads. Because the stakes are infinitely higher the possible losses are also correspondingly increased. After all, one is not forgiven an error of judgment at 60 m.p.h. on the road, and the private owner is averaging twice as much in many modern light aeroplanes.

Weather or No

IT seems, then, that we must look elsewhere for the real reasons, taking as a clue the interesting fact that the great majority of owners of a few years ago are still owners to-day. Once a private owner, always a private owner, in fact.

There is no doubt that the English climate makes flying difficult and even dangerous to the semi-novice on at least sixty of the three hundred and sixty-five days of the standard year. For the sake of airway safety the owner is specifically kept out of certain areas in bad conditions—such conditions, in fact, in which the amateur pilot, without radio, is, in any case, most unlikely to be out and about. A thousand yards of horizontal and a thousand feet of vertical visibility are the categorical figures.

Many prospective private owners are disturbed by early flying memories when an instructor, naturally eager for safety and a good insurance rate, prevented them from flying club machines in doubtful weather. High winds can be troublesome to the novice in a training type with a low wing-loading, and the instructor's favourite nightmare concerns a pupil who is still out with failing daylight and in thick weather.

But the owner learns that the pupil's bad weather is really not so bad after all. I shall never forget the surprise I felt six years ago when, taking off in rain soon after making my first solo, I found that I could see so very well.

Even the habitual hirer of club or other aeroplanes is

sometimes found gazing out of his window, quite unable to make up his mind whether to borrow an aeroplane or to go by car. When he *has* made up his mind the probability is that all the machines have been booked. However, everybody with a good radio set can listen to the hourly broadcasts—half after the hour—sent out by Heston on 1186 metres, and others can ring up one of sixteen meteorological offices in different parts of the country. Very shortly a central broadcasting station will be in action at Borough Hill, Northamptonshire, and the service will then be much more comprehensive.

Those Regulations

PROBABLY the impressive number of rules and regulations do more to prevent ownership than any other single thing. I know one first-class engineer who sold his machine in a mild temper because the excellent little modifications which he made to an obsolete machine were torn off by zealous inspectors, and at least two other present owners who imagine, at least, that they are breaking the law by carrying out minor jobs of work without ground engineers' licences A, B, C and D. Each keeps his aeroplane in a private hangar and each probably does the various little jobs with greater care because he has to fly the machine. Perfectly good ground engineers and maintenance companies have been known to leave undone that which they ought to have done.

The Gorell Committee recommended that the possession of a C. of A. should be optional in the case of a private owner's machine, but suggested that third-party insurance should be compulsory—a suggestion which effectively reduces the value of the option. It also suggested that the number of documents carried should be reduced, for this country, to a third-party insurance certificate.

Where Ignorance is Not Bliss

EVERYONE knows about the yearly C. of A. inspection and overhaul for "subsequent aircraft." The fee is £5 5s., plus the cost of doing everything that the inspector requires to be done. Every machine must, at present, carry certificates of registration and of airworthiness, a journey log book and the pilot's licence. Aircraft and engine log books are kept at home and each entry must be signed by a qualified ground engineer.

After a careful study of the terrifying A.N.D. eleven and the cross-questioning of various people, I must confess to being still in the dark on the question of what the private owner may or may not do—and so, apparently, is the private owner, who simply muddles along in the hope that he will not be put into prison. The fact that the log books must be signed by a ground engineer helps to clarify the situation, and "repairs" include overhauls, replacements, repairs and *work of a like nature*. Presumably, therefore, one is not to be allowed to change a plug, adjust a tappet, clean a filter, adjust a control cable or mend a tear in the fabric.

INDICATOR.

Private Flying

FROM THE CLUBS

Events and Activity at the Clubs and Schools

WALSALL

The club's "Avian" is at present down for C. of A., but some flying is being done on a "Spartan." On Whit-Monday there were quite a number of visiting machines at Walsall Aerodrome with parties for the Wolverhampton races.

HATFIELD

One of the London Aeroplane Club's "Tiger Moths" has flown no fewer than 605 hours during the past year, and has just been in for C. of A. overhaul. The work and replacements cost less than £20! Last week the club flew 57 hr. 55 min.

Mr. M. F. Barrington, of the D.H. sales department, left on Saturday for Madrid flying a "Moth Major" destined for the Iglesias expedition which is making a study of the upper Amazon. Floats are being shipped out, and the "Major" will become a seaplane in due course. A "Fox Moth" seaplane was used for the work last year.

CARDIFF

On June 10 Capt. Bailey, chairman of the Club, Mr. G. B. Dawson, and some friends went to Ireland, returning the following day. They used one of Western Airways' "Dragons," and although bad weather delayed them on the outward journey, particularly along the east coast of Ireland, the return trip from Dublin was made in 2 hr. 10 min.

Lord Patrick Crichton-Stuart flew down on June 13, bringing with him a beautiful silver cup and replica which he had promised to present when he attended the last Air Pageant at Cardiff. The club wishes to extend its thanks to Lord Patrick for the gift, which is to be known as the Pylon Racing Trophy.

HANWORTH

A large number of early soloists were restrained from flying by high winds and heavy rain, but the flying time, nevertheless, totalled forty-five hours. Mr. A. Reid has commenced a course of instruction with a view to obtaining his instructor's licence.

New members are Messrs. P. Gunning, F. Huntington, K. Robinson, and H. Finch, the last named being the first member to start flying at Hanworth under the Air League's Young Pilots Scheme.

Mr. J. H. Richardson has joined the staff of the Autogiro Flying School as an instructor. He is the only holder of a "B" licence in the country who has never flown an aeroplane. Last week he left for Italy with a C.30 for the Italian Navy.

Herr Behrendit, chief instructor to the Austrian Aero Club, also took delivery of and departed with a new C.30.

Mr. Max Stoker completed all the practical flying tests for his "B" licence with the exception of the cross-country flight by night.

Mr. J. A. McMullen, the oldest *ab initio* trained Autogiro pilot in the world, flew to Beaulieu and landed in a field belonging to a friend, with whom he returned to Hanworth. It was then disclosed that their combined ages were 155 years; Mr. McMullen is seventy-two.

WITNEY AND OXFORD

Of the 25 hr. 5 min. flying logged last week, 10 hr. 40 min. was solo flying. Mr. Thomas Stuart Tull, of Oxford, and Mrs. Mary Taylor, of Witney, have become members.

MIDLAND

Strong wind and showers prevailed last week, keeping the flying time down to 8 hr. 10 min. dual, and 7 hours solo. Mr. L. P. Murphy has become an ordinary member.

CAMBRIDGE

The "Puss Moth" has been very busy on charter work, and has been away on every day of the week. Storms were responsible for two non-flying days, but the flying time, nevertheless, totalled 53 hr. 26 min. Messrs. Jones and Branston passed their "A" licence tests, and Mr. Pirie made his first solo. Four new members have joined, and on Sunday nine members of the Civil Aviation Corps attended; eight of them flew.

BROOKLANDS

Continuous flying over the week-end made up for time lost on Tuesday and Wednesday, when wind precluded instruction. The total is 70 hours.

Mr. Van Damm completed his "A" licence tests, and Messrs. Dudley, Hyde-Jones, and Uniacke made their first solos. Miss Barnard finished her cross-country tests for the "B" licence.

Capt. Davis and Mr. Ken Waller flew and thoroughly approved the Gipsy Six-engined "Gull" brought over by Capt. Percival. Mr. Goudas has gone to Northampton as instructor at the Brooklands Reserve School and has been replaced by Mr. D. Rea; Mr. Bancroft also has left for Northampton Reserve School, where he has been appointed Chief Ground Engineer.

CINQUE PORTS

No fewer than ten new members joined the Club recently. Among them is Mr. Giles Mills, of the Aero Club de Normandie, Rouen, who owns a Potez 2-seater, and two army officers, Mr. W. A. C. Annersley and Capt. H. G. Rew.

On June 3 seven machines carrying twenty passengers left for a five-day tour of Belgium, Germany and France. The party was led by Lt. Col. L. A. Strange in a Spartan "Cruiser," and one of the pilots was Miss Fontes, sister of Mr. Luis Fontes, of motor racing fame. The Hon. Peter Rous and Mr. P. J. Johnston went solo, and Mr. C. R. Hodgson took his "A" licence in the first week of June.

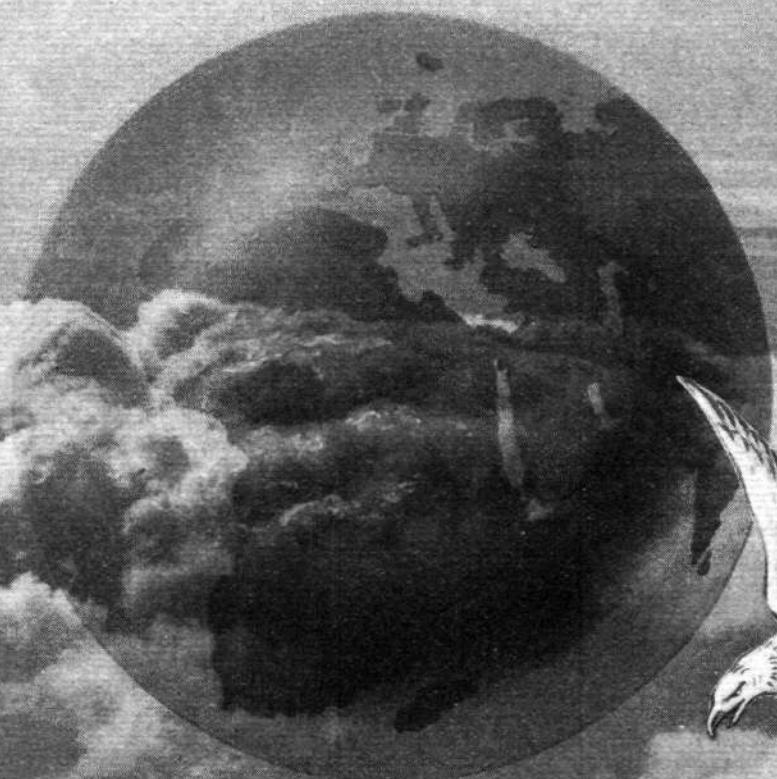
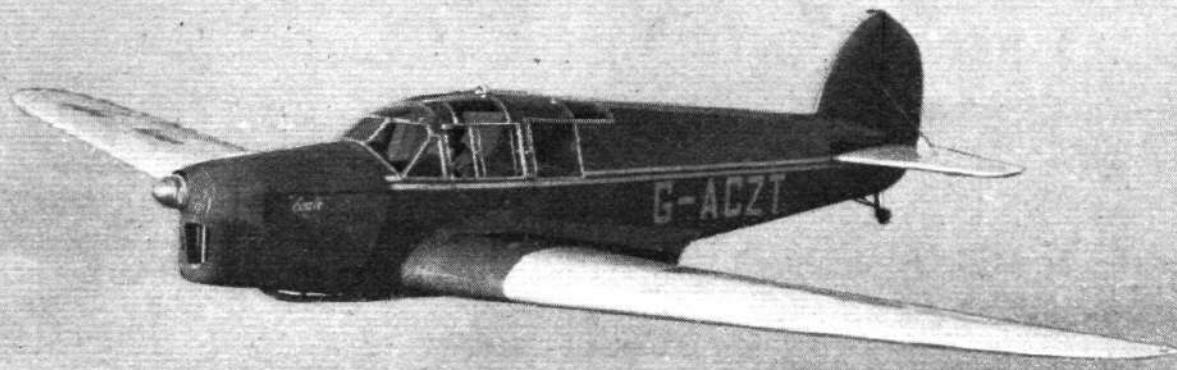
On Whit Sunday more than 26 hours were flown, bringing the total, up to Thursday last, to 55 hr. 30 min. During the evening all the club's machines and pilots flew to Bekesbourne. It was discovered on arrival that the aerodrome was shut for the day.

Last week Mr. C. T. Pearson and Mr. H. D. Bingham passed their "A" licence tests, and first solos were completed by the Hon. Peter Rous, Mr. W. H. Birbeck and Capt. H. E. Rew.



INSTRUCTIONAL FLIGHT : Members of the Bombay Flying Club leaving their machines at Heston after flying from India in formation. The leader, Mr. A. C. Gazdar, is the tall figure in the centre and Flt. Lt. Carey also accompanied the flight.

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2. The present pre-eminent position of the Hispano Suiza engine is the result of intensive development over a period of 25 years. Hispano Suiza engines, used by the R.A.F. during the war, have long been the standard power unit in the aerial military equipment of many foreign countries and frequently where British machines have been ordered these engines have been specified for their unrivalled reliability and performance. Half the French Air Force is to-day equipped with Hispano Suiza engines.
3. Throughout the world more than 50 types of military and commercial aircraft are fitted with Hispano Suiza engines. Since the war they have achieved no fewer than 90 world records and now hold 9 world speed, distance and altitude records. They have made 38 crossings of the Atlantic Ocean and are regularly employed on the South trans-Atlantic routes.
4. To meet the demand for engines in the medium power range the Company will manufacture the General Aircraft "Monarch" series, the most compact and simple aero power unit yet produced and ideal for the private owner and commercial operators.
5. The Company's output will comprise engines with the complete range of power required for all types of aircraft, the well-known Douglas five horse-power glider aero-engine, the General Aircraft medium size series, and the Hispano Suiza range up to the largest sizes.
6. In addition to complete engines the Company will also begin to manufacture immediately armament and equipment necessary for both military and civil aircraft.
7. The total net assets of the Company, exclusive of goodwill, exceed £490,000, thus covering the Ordinary Shares nearly three times.

Preferential consideration will be given to applications from Shareholders of General Aircraft Limited if made on the special forms provided.

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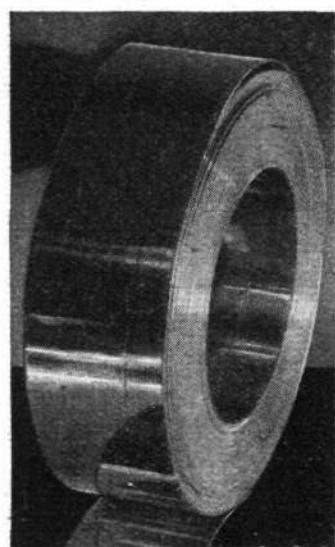


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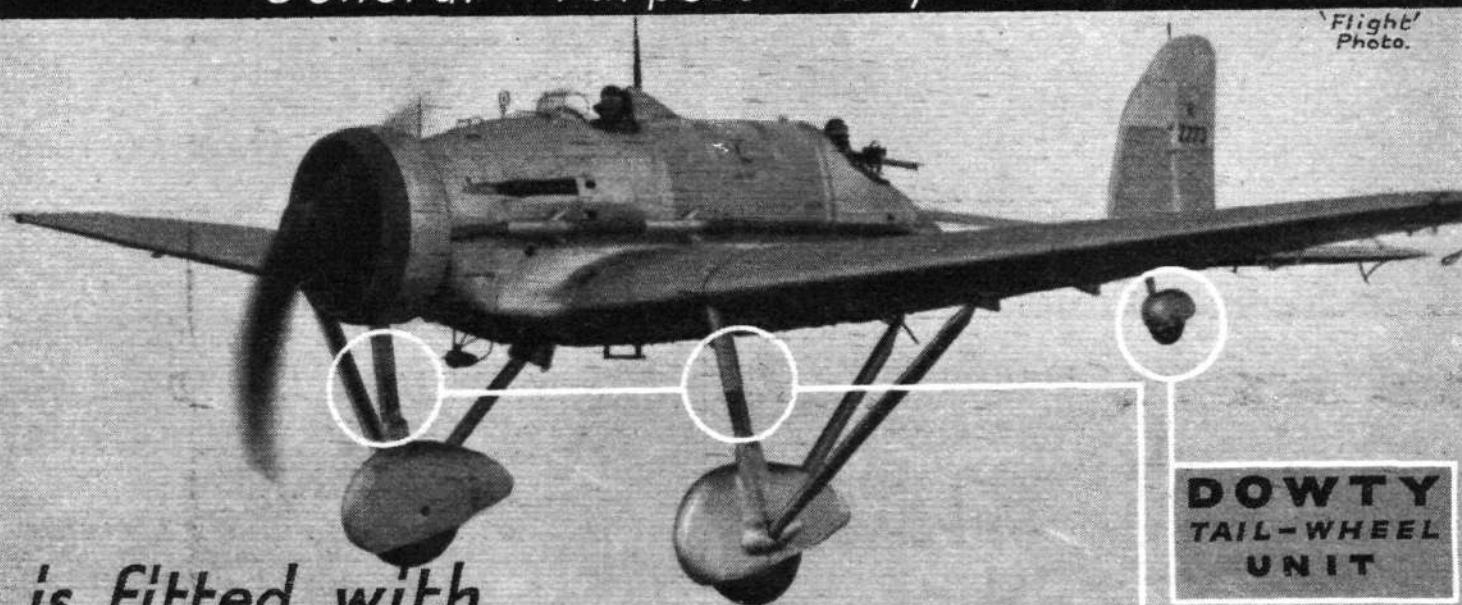
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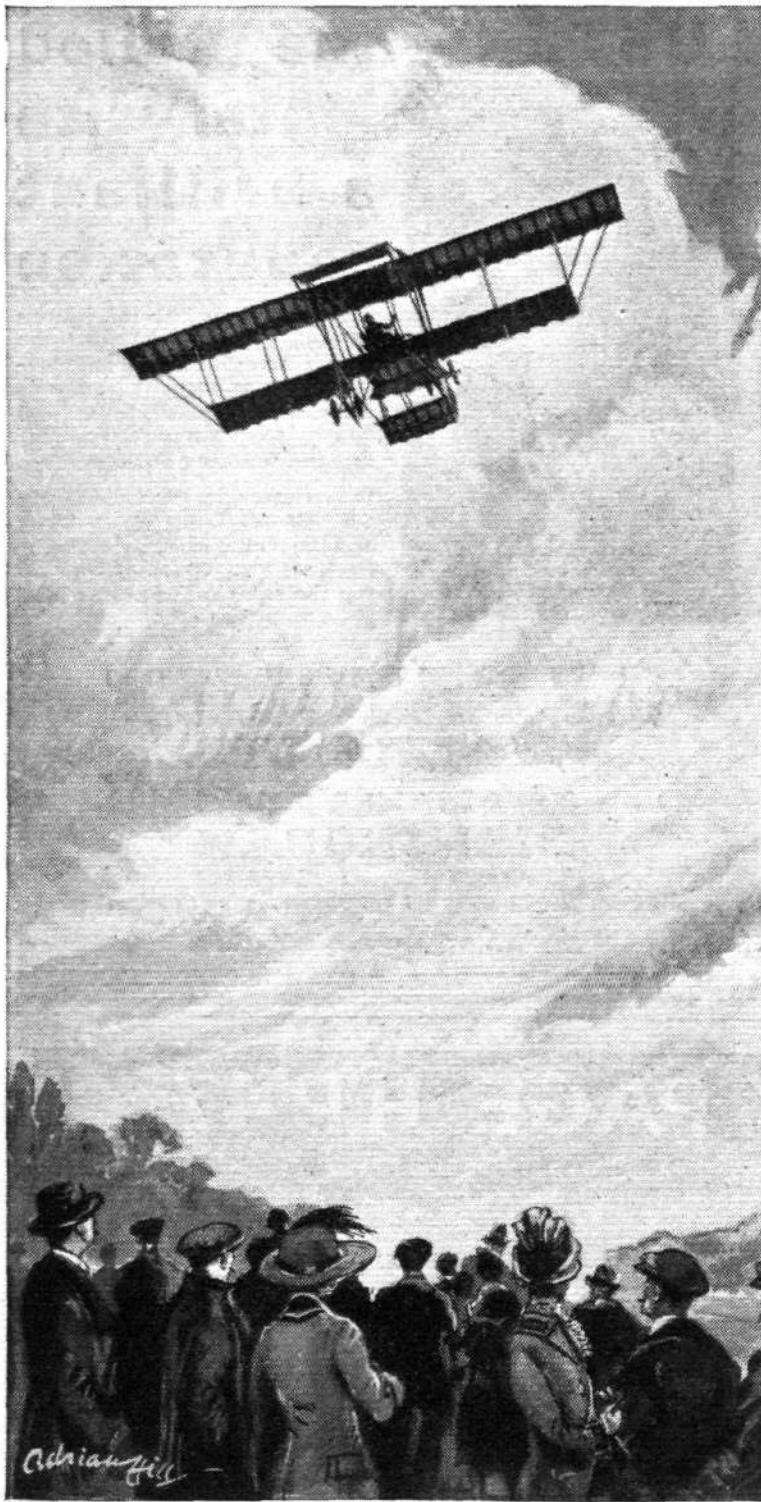
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Kindly mention "Flight" when corresponding with advertisers.

TOLLERTON

Cross-country trips were made last week to Manchester, Leicester, Derby and Skegness. Strong winds made flying impossible for two days of the week. Club machines flew 27 hr. 53 min. There are five new associate members.

HULL

Last month the Club put in 70 hours flying, but considers that this is not yet enough. Several associate members are transferring to the flying category. During the summer months the Club dances will be held every three weeks instead of fortnightly as in the past.

REDHILL

Pilots of British Continental Airways and Provincial Airways have been making practice landings on "Dragons." Mrs. Brown and Mr. Reynolds have completed their blind flying courses, and Mr. T. T. Oliver has made his first solo flight. New members are Messrs. L. A. Cubitt and E. J. Gregson.

KENT

The Kent Flying Club has been approved to receive the Government subsidy.

A formation from Bekesbourne visited Redhill last week. High wind during the first half of the week kept the total flying hours down to twenty-five.

Mrs. Klein and Mr. Cutler have joined the club, Mr. Chalmers made a successful first solo, and Mr. Tuckwell passed his "A" licence tests.

LEEMING

Yorkshire Aviation Services Flying School did 69 hr. 30 min. in the fortnight ended June 16 in spite of rather unfavourable weather. Mr. Knowlson, of Thirsk, successfully completed his "A" licence tests.

Air taxi trips were undertaken to the Isle of Man, Liverpool and Barton, while cross-countries were made to Southend and Lympne. Mr. T. C. Pick completed the night flying tests for his "B" licence.

INSURANCE

The flying time returned for April was 70 hr. 35 min. and for May 79 hr. 5 min. It is obvious from the large increase in flying that the Club's second machine is more than earning its keep. During April, Mr. D. Gudgeon, Mr. K. Winstanley, Mr. G. Aylott and Mr. R. Hiscox passed their "A" licence tests. Other new soloists include Messrs. Cole, Hammond, McKenzie, Cope and Cox.

The directors are holding their "At Home" on Saturday, June 22, at Hanworth. It has been arranged that certain directors who will be attending a Conference at Cardiff on the previous day shall be brought to the "At Home" by air.

Mr. C. F. Hughesdon won the cup offered for the air race organised at Hanworth at the opening of the new Clubhouse.

Buy a "Brisfit"!

Among the ten aeroplanes which have been sold by the new Airwork sales department since May 30 were two Bristol Fighters.

It is not generally known that the Bristol Fighter or "Brisfit" of wartime fame can still be purchased *new* for upwards of £100. The reason for this is that the parts for many of these machines, manufactured but never assembled, are still obtainable, and so one of the most famous aeroplanes in history can be purchased unused, for a song, in the present year of grace. The reader who reflects, sagely, that there must be a crab somewhere, will rightly guess that they are comparatively costly to run. But they do not suffer from the disadvantage of many obsolete machines of a later date—the fact that replacement parts are costly or unobtainable.

In Reserve at Maidenhead

One of the four contracts in open tender for the new Reserve schools has been obtained by the De Havilland Company, and 200 acres at White Waltham, near Maidenhead, have been purchased. At present the land is given to market gardening, but operations are in hand, and the aerodrome will be ready in November.

The site is about one and a half miles from Maidenhead and adjoins the main railway line from London to Reading. The runs will be of the order of 1,000 yards or more, and no doubt, though without encouragement, sundry private owners will use it in their week-end voyages. There will be six instructors.

Of the four contracts, the other three have been obtained by Blackburns, Phillips and Powis, and Brooklands Aviation, but more are to come. Actually, 75 per cent. of the machines used in the four schools will be "Tiger Moths."

NEWCASTLE-UPON-TYNE

A first solo flight was made by Mr. M. A. Fraser, and Mr. J. C. Neilan completed his "B" licence tests. Mr. B. L. Madgen has become a member. Of the total flying time (42 hr. 30 min.) 22 hr. 25 min. represents solo.

WIGAN

The Wigan Jubilee Aero Club, with headquarters at "The Poplars," Wigan Lane, Wigan, has recently been established. Mr. Harry Williams, of Wigan, is the chairman. A landing ground has been obtained at Hindley, and a machine is to be purchased.

NORTHAMPTONSHIRE

Last Sunday Lord and Lady Willoughby de Broke landed at Sywell in the "Eagle" with which Lord Willoughby won the S.B.A.C. Trophy. Lord Willoughby has agreed to the club holding the trophy, which he brought in the "Eagle."

The Wellingborough police chartered an aeroplane on Sunday to look for two offenders who were hiding in the local gravel pits. The burglars, however, had managed to find an underground shelter and were invisible from the air.

Mr. A. Claydon has gone solo, and Mr. J. H. Franklin has completed all the tests for his "A" licence.

YORKSHIRE

Mr. and Mrs. F. E. Rhodes, of Bradford, both members of the Yorkshire Aeroplane Club, started on June 18 for a week's Continental tour.

A most enjoyable trip to Austria and Hungary for the Rally is reported by Mr. and Mrs. La Touche, who have arrived back at Yeadon. Mr. R. J. Pattinson, a new Leeds member, has just bought a "Bluebird" on which he is learning to fly.

NORFOLK AND NORWICH

The Whitsun holidays brought a large number of visitors to the Club by air; many of them visited Norwich and the Broads. At one time there were eleven visiting machines on the aerodrome.

During the past month no less than 40 members joined the Club, and it is hoped that by the end of the year membership will reach 500.

YORK COUNTY

Flying time is well ahead of that for previous months in spite of the fact that the chief instructor has left to take up an appointment at the Hanworth Club. Until a new instructor arrives Mr. W. Humble will undertake the work.

First solos have been made by Messrs. Sagar, Tetley, Moore, Fouracre and Foster.

Mr. W. Humble has bought a racing model Miles "Hawk." Two members have entered for the King's Cup race, and others have utilised Club machines for business trips.

The Summer Ball will be held on July 19.



CABIN COMFORT: Signor Parodi, the pilot of a Miles "Falcon," is congratulated after winning the Raduno Sahariano in Tripoli. General Balbo, in a sun helmet, can be seen beside the engine cowling. The "Falcon" was the only English machine in the Rally.

THE "HORNET MOTH"

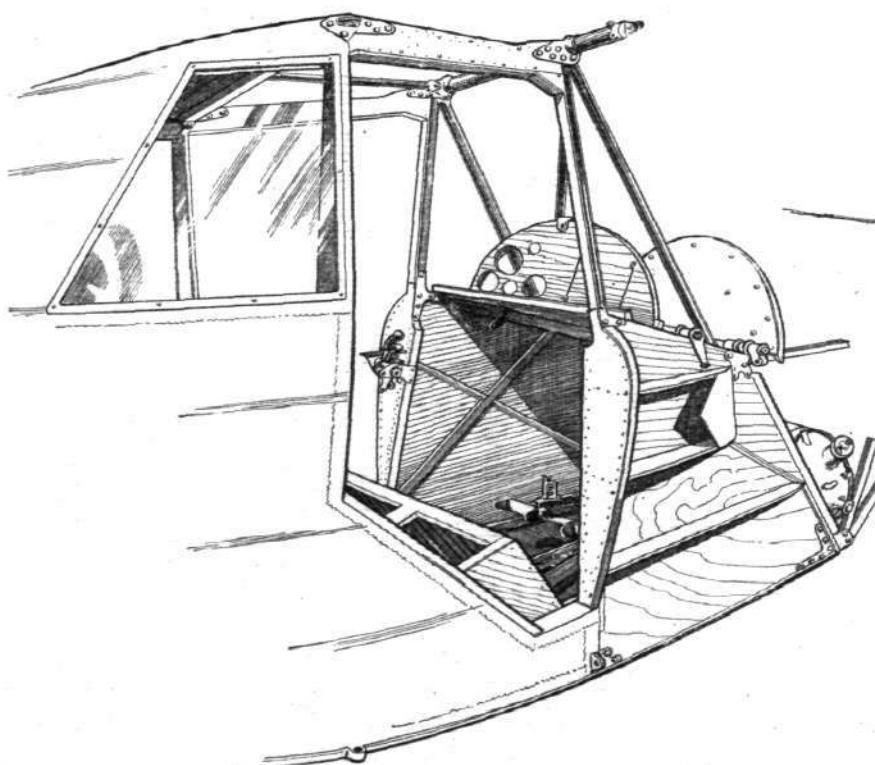
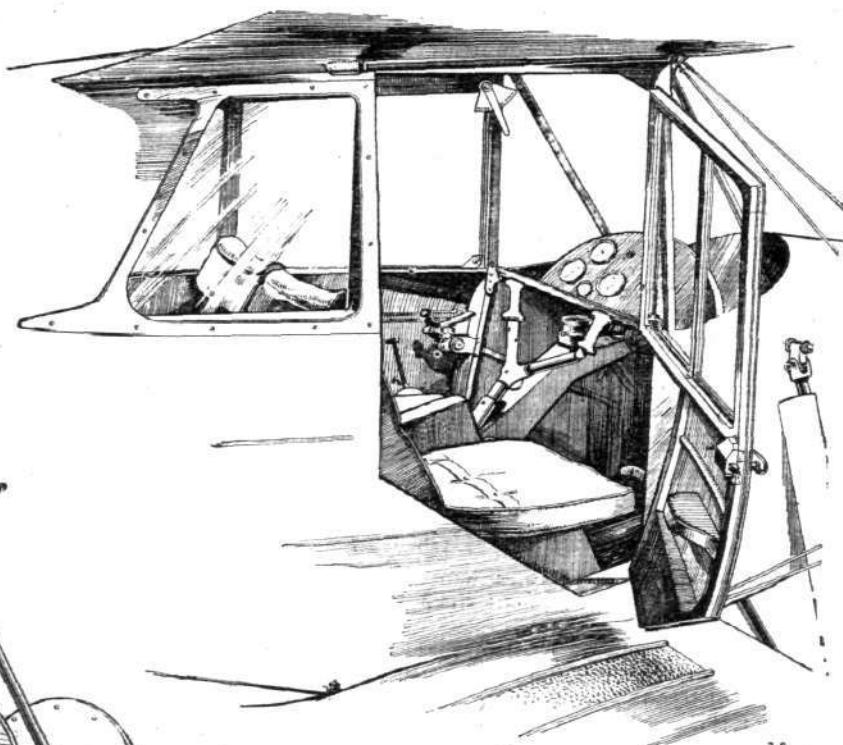
Successor to the World-famous D.H. "Moth"—A Cabin Biplane with Side-by-side Seating : "Gipsy Major" Engine : Rudder Control Necessary on Ground Only : No Tendency to Spin

THE first "Hornet Moth" made its public appearance last summer, when it took part in the King's Cup Race, piloted by Capt. G. de Havilland himself. The machine was an experimental model only, and the De Havilland Aircraft Co., Ltd., has now spent a whole year in flight-testing it and two other experimental machines before being satisfied that they have evolved an aeroplane as nearly perfect for its purpose as possible. Hundreds of hours have been spent in flight-testing, and every aerodynamic characteristic and mechanical feature tried and re-tried. When, therefore, the firm now announces itself satisfied with the machine, it is reasonable to assume that all the "bugs" have been removed, and that the "Hornet Moth" goes into production as a fully tried type. As stated in *Flight* a fortnight ago, elaborate preparations have been made for quantity production, and it is expected that the flow of output will begin in August.

In its general conception the "Hornet Moth"—which, incidentally, is the eighty-seventh De Havilland design—is a cabin biplane two-seater, with the seats placed side-by-side. In plan form the biplane wings show the graceful taper which has characterised De Havilland machines for some time. The lines, as may be seen from the general arrangement drawings, are pleasing to the eye, and, what is a great deal more important, the machine is thoroughly pleasant to fly. Not only is the view from both seats very good, the seats comfortable, and the general noise level low, but a great deal of trouble has been taken over such questions as stability and controllability. For example, areas and centre of gravity positions have been so arranged that once the

machine is in the air there is no necessity to use the rudder at all. Ordinary flying manœuvres can be carried out perfectly by the use of elevators and ailerons only. This means that on a cross-country flight the pilot can take his feet off the rudder pedals and control the machine entirely with the "stick." Provided he keeps sufficient altitude to clear any obstacles on his route, he should be able to fly through fog, cloud and rain without any fear of getting his machine into a dangerous attitude.

On the "Hornet Moth" the rudder can, in fact, be regarded solely as a ground control. In many cases it might even be possible to take off and land the machine without using the rudder, but as there is always the possibility that a swing may be started, by one wheel striking some small obstacle or unevenness on the ground, for instance, it is still considered necessary to fit a rudder to correct such swings. If the rudder is used during flight, the "Hornet Moth" will, of course, have the same

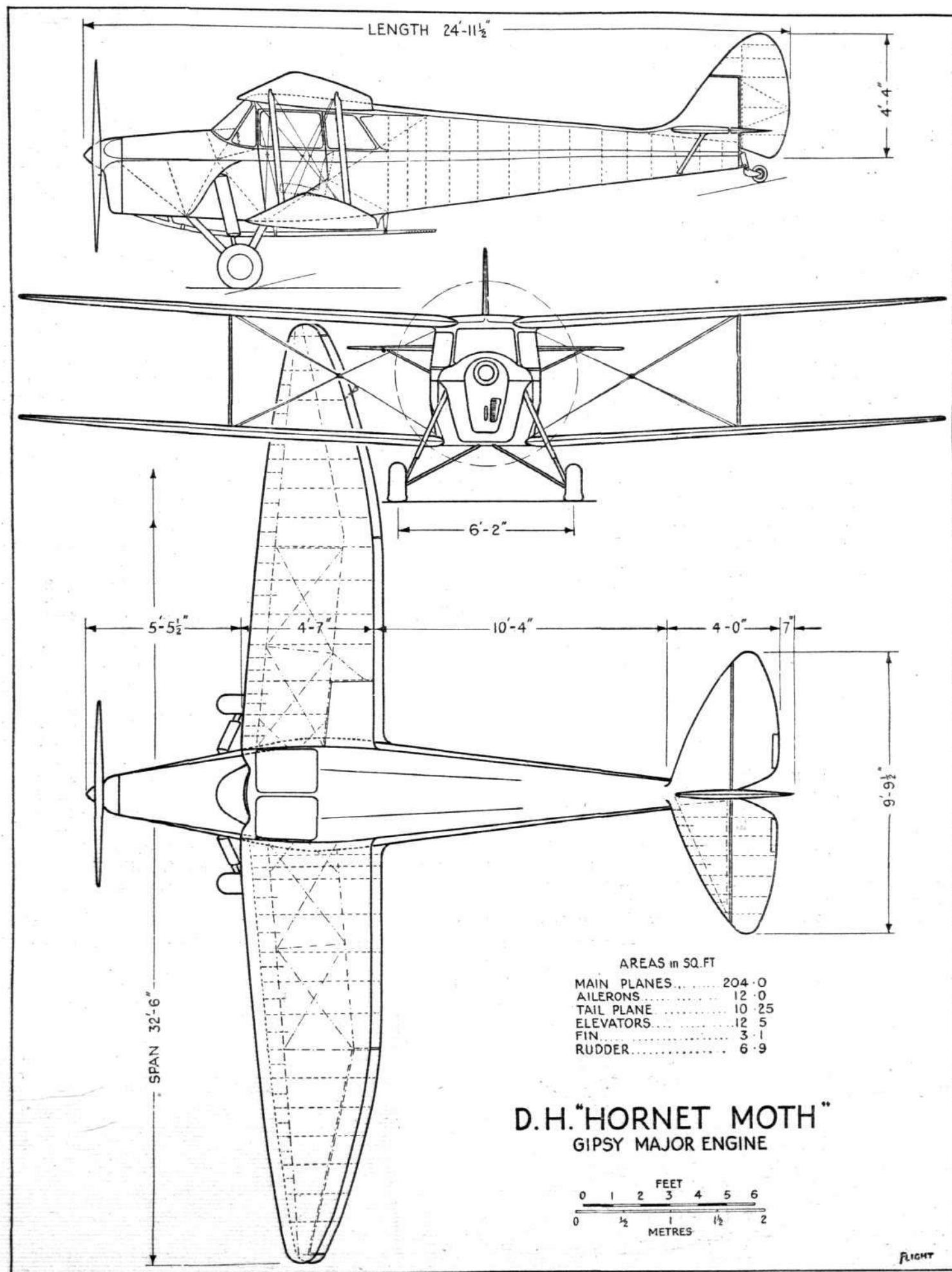


The forward part of the fuselage structure. The box on which the seats rest can be used for carrying tools, batteries, etc. The finished cabin is shown in the upper sketch. The right-hand control handle is detachable.

manoeuvrability as any aeroplane, and can be used for aerobatics, the structure being designed with sufficiently high load factors. The standard type will not have a certificate of airworthiness for aerobatics, but this is merely due to the fact that Aerobatic C. of A. regulations demand that doors shall be so designed that they can be jettisoned instantly in emergency (to allow the occupants to escape by parachute), and the standard machine will have normal hinged doors. Structurally the machine is up to aerobatics requirements.

Constructionally the "Hornet Moth" follows normal De Havilland practice in that it is of wood construction in the matter of its primary structure, with fabric covering and steel fittings. The fuselage is a wooden box, with light longerons and struts covered with plywood. On to the outside of the plywood are secured longitudinal stringers, which sup-

THE LAYOUT of the "HORNET MOTH"



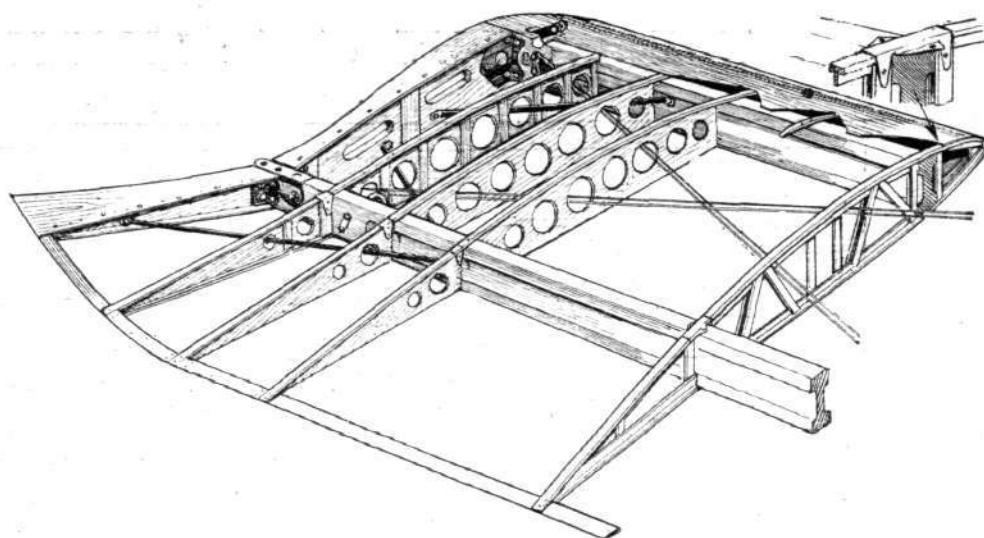
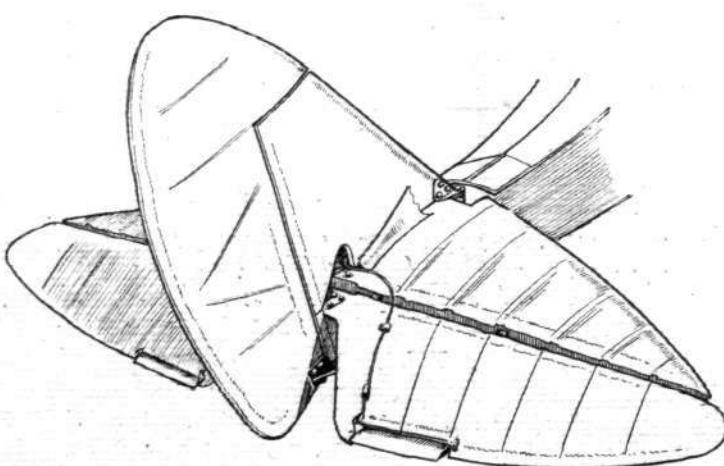
The wing construction of the "Hornet Moth" is of wood. The root of the lower starboard wing is shown, with trailing edge raised to meet the corner of the fuselage.

port the fabric covering. As these stringers project beyond the plane of the plywood, the external form of the fuselage is somewhat rounded, giving better aerodynamic form. Inspection doors are provided at intervals in the floor of the fuselage so that the interior can be examined.

The biplane wings are of normal two-spar construction, with spruce spars spindled to an I-section. Over the inner portion of the wings front and rear spars are parallel, but they converge over the outer portions and meet at the wing tips. Over this portion, by the way, the spars are solid spruce. One pair of inter-plane struts on each side joins top and bottom planes. They are steel tubes of streamline section. The wing bracing is so arranged as to terminate at the fuselage in the plane of the front spars, thus running clear of the door and facilitating getting into and out of the cabin. Ailerons are fitted to the lower wing only and are of orthodox type. The wings are arranged to fold, the overall width of the machine for storage being thus reduced to 9 ft. 6 in.

The tail surfaces are of normal De Havilland construction, i.e., wood with fabric covering. The only notable change from previous machines is the introduction of trimming "tabs" on the elevators instead of fitting a trimming gear for the tail plane. Needless to say, a castoring tail wheel is fitted.

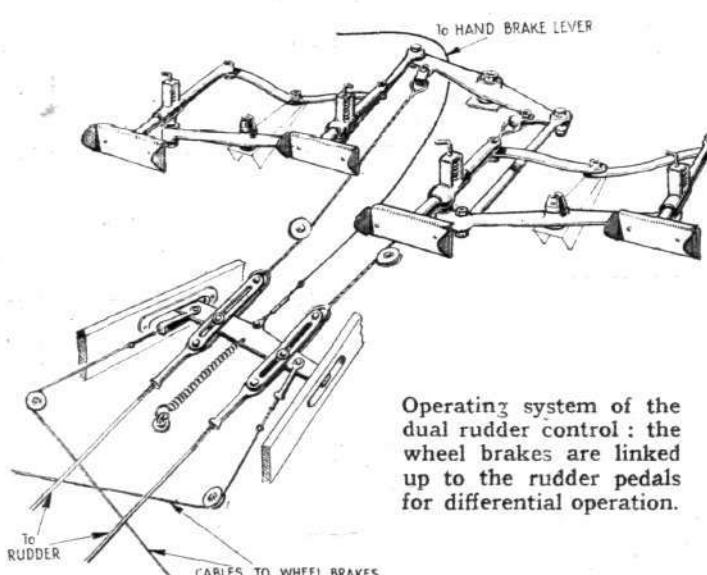
As already mentioned, the two seats in the cabin are placed side by side; they are very comfortable and allow plenty of room. The seats are placed on a box structure, inside which can be carried tools or other equipment, such as batteries for electric starting, etc. If the machine is desired to have fairly long range, an extra petrol tank of $8\frac{1}{2}$ gallons capacity can be fitted in this space. Behind and above the seats is the main luggage space, $23\frac{1}{2}$ in. deep, 28 in.



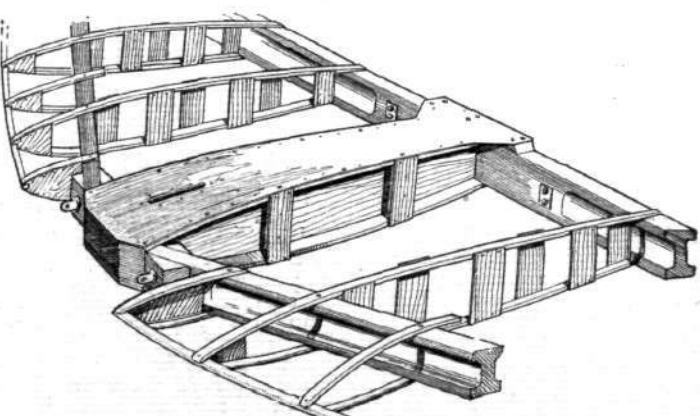
high, and $38\frac{1}{2}$ in. wide. Underneath this large luggage shelf is the main petrol tank, which is, of course, isolated from the cabin. It has a capacity of 35 gallons. Underneath the instrument board there is another space, which can be used for maps and various odd articles likely to be required on the journey. A rounded one-piece wind-screen closes the front of the cabin, while the windows at the side are of the sliding type for ventilation or view during landing in rain.

Dual controls are fitted, the "stick" being fitted with two branches, one for each occupant. If it is intended to use the machine for school work, a second set of engine controls can be mounted on the starboard side of the cabin.

Operating system of the dual rudder control: the wheel brakes are linked up to the rudder pedals for differential operation.



The undercarriage has a wide track, the axle and radius rods being hinged on the bottom centre line of the fuselage, while the compression strut is taken to the top longeron. The compression strut has a long stroke and is fitted with a streamline fairing of large chord, so mounted



The tail surfaces are of normal De Havilland form, but trimming "tabs" are fitted on the elevators and the tailplane is fixed. The right-hand sketch shows the tailplane structure.

release one or other of the two brakes, thus making the machine very manœuvrable on the ground.

A 130 h.p. "Gipsy Major" forms the standard power plant for the "Hornet Moth." It is mounted on the usual steel tube structure and drives a wooden propeller of the sheathed type, made by the Airscrew Company, of Weybridge. The position of the main petrol tank is such that it would not give direct gravity feed to the engine at all angles, and petrol is, therefore, carried to the engine by duplicated engine-driven petrol pumps.

The "Hornet Moth" is to be marketed at a price of £875, with standard equipment, which includes the following Smith's instruments: Air-speed indicator, revolution indicator, aneroid, oil-pressure gauge and Husun Mark IIIa compass. A bubble-type inclinometer is also fitted as well as a De Havilland strut-type air-speed indicator.

Standard cabin furnishings will include pilot's and passenger's seats, cushions and back squabs; thigh straps and pilot's safety belt; floor carpet; locker below instrument board, fitted with spring clips for maps; black Doverite finish of all control handles; grey walnut instrument board; sun-blind. The cabin upholstery will include neutral colour rep cloth with leather piping; cushions and squabs filled with rubberised hair; carpets to tone with the upholstery.

The approximate performance figures are shown in the accompanying table. The range given is that with the standard tank of 35 gallons capacity. If the 8½-gallon tank is fitted in the box under the seats the range is increased to 817 miles.

DE HAVILLAND "HORNET MOTH."

130 H.P. "GIPSY MAJOR."

DIMENSIONS

	ft.	in.	m.
Length o.a. ...	24	11.5	7.56
Wing span ...	32	6	9.96
Width, folded ...	9	6	2.90
Wing area, incl. ailerons and centre section, 220.5 sq. ft. (20.45 m ²)			

WEIGHTS

	lb.	kg.
Tare weight ...	1,240	563
Pilot ...	160	73
Passenger ...	160	73
Petrol, 35 gals. (159 l.) ...	270	122
Oil, 2 gals. (9 l.) ...	20	9
Luggage ...	100	45
Gross wt. (Normal C. of A.) ...	1,950	885
Wing loading ...	8.85 lb./sq. ft. (43 kg/m ²)	
Power loading ...	15 lb./h.p. (6.8 kg/h.p.)	

PERFORMANCE

Max. speed, ground level ...	131 m.p.h. (211 km/h)
Max. speed at 5,000 ft. (1,525 m.) ...	126 m.p.h. (203 km/h)
Max. speed at 10,000 ft. (3,050 m.) ...	120 m.p.h. (193 km/h)
Cruising speed at 1,000 ft. ...	111 m.p.h. (178 km/h)
Range (35 gallons) ...	658 miles (1,060 km.)
Stalling speed ...	40 m.p.h. (64 km/h)
Take off run ...	160 yards (148 m.)
Time to take off ...	13 secs.
Height reached in 400 yards ...	80 ft. (25 m.)
Landing run ...	125 yards (114 m.)
Initial rate of climb ...	800 ft./min. (4 m/sec.)
Time to 5,000 ft. (1,525 m.) ...	7.5 min.
Time to 10,000 ft. (3,050 m.) ...	18.5 min.
Service ceiling ...	15,600 ft. (4,760 m.)
Absolute ceiling ...	17,800 ft. (5,430 m.)

Petrol consumption at cruising speed 5.9 gal. (27 l.) per hour = 18.8 miles per gal. (6.7 km/l.)

"NEW and EXPERIMENTAL" at HENDON

A TRIO of new bomber-transport machines, built by the Armstrong-Whitworth, Handley Page and Bristol Companies to the Air Ministry specification C.24/31, will occupy a wide area of the New and Experimental Types Park at the R.A.F. Display, Hendon, on June 29. Each is equipped to carry at least twenty fully-armed soldiers or an equal load of bombs or stores. The Armstrong-Whitworth machine, designated the A.W.23 and illustrated in *Flight* last week, has a pair of supercharged Siddeley "Tiger VI" fourteen-cylinder radials of 750 h.p. each, mounted on its single cantilever wing, a retractable undercarriage, flaps and enclosed cockpits; it measures 88 ft. in span, is rather more than 80 ft. long and nearly 20 ft. high. The Bristol C.24/31 uses two "Pegasus III" radials of 690 h.p. and the Handley Page "trooper" also has two "Tigers."

There will be only one single-seater fighter—the Gloster F.7/30 (650 h.p. Mercury VI), developed from the "Gauntlet."

let." A single-bay biplane, this type has four machine guns and a single-strut undercarriage with internally sprung wheels.

Four general-purpose types from the Vickers, Hawker and Handley Page factories are on the list—two biplanes and two monoplanes, all fitted with the 690 h.p. moderately supercharged "Pegasus III." Vickers have a monoplane and a biplane (here should be material for absorbing comparison); the Hawker is particularly suited to "dive bombing"; and the Handley Page monoplane, already dealt with in *Flight*, uses to the fullest extent slots, flaps and "interceptors."

Then there will be the Supermarine "Seagull" amphibian biplane with a single "Pegasus II" driving a pusher airscrew.

There is some doubt if the Westland-Hill Pterodactyl II will be available for inclusion in the Park.

The recently-adopted Avro 652 (conversion) coastal reconnaissance monoplane, which does about 190 m.p.h. with two 290 h.p. supercharged "Cheetahs," is also listed to appear.

A Golfing Success

At the Summer Meeting of the Aero Golfing Society, held at Wentworth last Thursday, the winner of the *Flight* Challenge Trophy was Mr. G. E. Beharrell, who, playing from scratch, returned a card of 69. Lt.-Col. W. A. Bristow—86 less 14 equals 72—was second.

In the four-ball foursomes, Mr. G. E. Beharrell and Major R. H. Mayo, 5 up on bogey, were the winners.

Important Visitors

Below is a list of important personalities connected with aviation who are at present visiting this country. Others who would like their names included in order that their friends may be made aware of their visit are asked to communicate with the Editor.

Mr. T. Q. Smith (Wellington Aero Club), Mr. J. V. Connolly, B.E. (Aero Club of New South Wales), Capt. G. B. Bolt (Cook Strait Airways, Ltd.), Mr. W. Grazebrook (Royal East African Automobile Association), Mr. G. Blowers (Aero Club of East Africa), Capt. Rod Douglas (De Havilland Aircraft Co., Ltd., South Africa), Mr. Colin F. Abbott (Shell-Mex, Ltd., Argentina), Mr. C. C. Lewis de Grenier (Aero Club of India and Burma), Mr. J. Tattersall (Hawke's Bay and East Coast Aero Club), Capt. E. C. Johnston (Director of Civil Aviation, Australia).

People wishing to communicate with any of the above should write to them, c/o The Royal Aero Club, 119, Piccadilly, London, W.1.

A WEEK'S WEATHER

Below appears another of Mr. D. K. Bartlett's "long-range weather forecasts." "Flight" publishes this as a matter of interest, and accepts no responsibility for its accuracy or otherwise.

THURSDAY, JUNE 20: Mainly fine, with bright periods.

FRIDAY, JUNE 21: Some cloud with breezy spells, the weather generally mainly fine and bright in all districts.

SATURDAY, JUNE 22: Changeable to fair in south-east of England; elsewhere mainly fair, with local showers in the North.

SUNDAY, JUNE 23: Mainly fine in all districts.

MONDAY, JUNE 24: Bright and fair weather continuing.

TUESDAY, JUNE 25: The fine weather spell will remain.

WEDNESDAY, JUNE 26: Fair, with unsettled tendency gradually setting in from the West, across the Midlands to East Coast.



The new Secretary of State for Air, Sir Philip Cunliffe-Lister (left), F/O. W. Hammerton (Vice-Chairman, Royal Air Force Club) and Lord Trenchard (President) watching the flying. (Flight photograph.)

ALTHOUGH rain all but spoilt the second half of the programme at Hatfield last Saturday, when the Royal Air Force Flying Club held its annual display, the result, considered as a display of flying, was undoubtedly a success.

Sir Philip Cunliffe-Lister, the Secretary of State for Air, arrived in the D.H. "Dragon Rapide," which has been allotted to No. 24 Squadron for communication purposes on such occasions as this. He was accompanied by A. V.-M. F. W. Bowhill, Sir Christopher Bullock, and Air Marshal Sir Hugh Dowding, and was welcomed by F/O W. A. Hammerton, Vice-Chairman of the Committee; Marshal of the R.A.F. Lord Trenchard, the President of the Club; and the Club Committee; Sir Philip Sassoon, Under-Secretary of State for Air; Air Chief Marshal Sir Edward Ellington, Chief of the Air Staff; Lt.-Col. F. C. Shelmerdine, Director-General of Civil Aviation; and Capt. E. C. Johnston, Controller of Civil Aviation in Australia, were also present.

The programme was rather long, but of excellent character. It started with an amusing relay race between teams of in-

ALMOST

Royal Air Force Flying Club Display at Hatfield—Sir Philip Cunliffe-Lister, the new Secretary of State for Air, makes his first visit to the club's annual display.

structors from the Bristol Reserve Training School and the De Havilland School which resulted in hectic riding of bicycles and skidding of "Tiger Moths" round wireless masts.

Flt.-Lt. H. Bailey, from the North Sea Aerial and General Transport Co., Ltd., who run the Reserve Training School at Brough, then inverted a Blackburn B.2 Trainer, and although it was announced that his fuel feed was not functioning satisfactorily, he seemed to remain inverted for the majority of his time. A climbing roll from an inverted dive was perhaps the *pièce de résistance* of his display.

The next item was a foretaste of what may be expected at Hendon at the end of the month. A flight from No. 25 (Fighter) Squadron, flying Hawker "Furies," gave a demonstration of the pitch of perfection to which flight aerobatics have been brought in the R.A.F. Loops or rolls in any sort of formation all seemed the same to them. Change of formation, either during a loop or in a very tight turn at low altitude around the aerodrome, was equally perfectly done and words cannot express the beauty of their display. A climbing roll while in "squadron vee" formation was, perhaps, the best of their manœuvres.

Mr. F. Coveney jumped from Mr. L. Irvin's Stinson "Reliant" when over the aerodrome, and with the help of an Irvin Airchute landed "right on the spot" in front of the enclosures.

Event 4 put our hearts into our mouths at the take-off and kept them there until after the landing. The reason was the hectic display by F/Os G. King and V. Moon, flying instructors of the De Havilland School. They threw their "Tiger Moths" about in seemingly impossible fashion and, watching the expression on Capt. de Havilland's face, one wondered whether he wasn't just a bit worried at having produced a flying machine which permitted mere man to take such liberties with it. The whole item looked more like a demonstration of aircraft strength-testing than anything else.

No. 600 City of London (Fighter) Squadron and No. 601 County of London (Fighter) Squadron, Auxiliary Air Force, then came over in formation, and Mr. K. Hole, at the microphone, hurriedly called people out from their tea in the clubhouse to see them. Their flying was, as it always is, hardly distinguishable from that of the R.A.F. No. 43 (Fighter) Squadron then put their Hawker "Furies" through a display of squadron air drill which was as good as anything we have seen for a very long time.



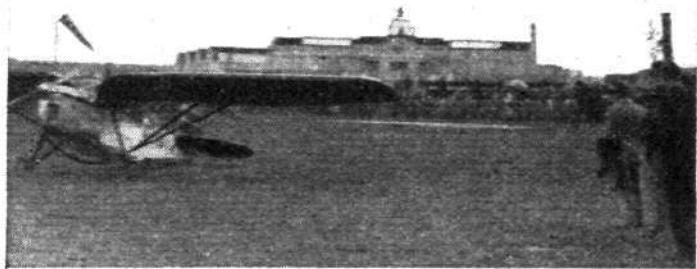
VASHOUT

*red by Rain : The New Secretary of State
ial Visit to a Flying Event*

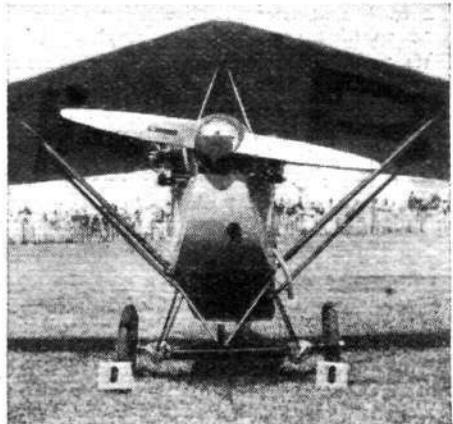
The rest of the afternoon was spent dodging the rain and catching glimpses of individual demonstrations from some sheltered corner. One of the Granger brothers flew the "Archaeopteryx," the semi-tailless machine which was described in *Flight* of October 31, 1930, then followed the B.A. "Swallow"—slower and safer looking than ever; the B.A. "Eagle"—fast and clean with its legs tucked in; the Saro "Cutty Sark"—old and trusty; the Airspeed "Envoy"—cruising at over 150 m.p.h. with its two engines; a Beechcraft—very fast, although Mrs. Mollison appeared to forget that it had a retractable undercarriage; and, finally, a demonstration of fast and slow flying as well as aerobatic manœuvrability by F/O. J. Lawn on the Miles "Hawk Major"—his aerobatics were as convincing as his slow flying, thereby showing good reason for the "Hawk" having been chosen as the first low-wing training machine for R.A.F. *ab initio* training.

Thereafter Capt. A. G. Lamplugh, as aerodrome control officer, permitted visitors to depart while the Band of the Royal Air Force from Henlow, which had been deterred throughout most of the afternoon by the rain, cheered the ears with martial music.

(Above) Not "behind the scenes" at the R.A.F. Display, but a panorama showing the machines lined up at Hatfield.
(*Flight* photograph.)



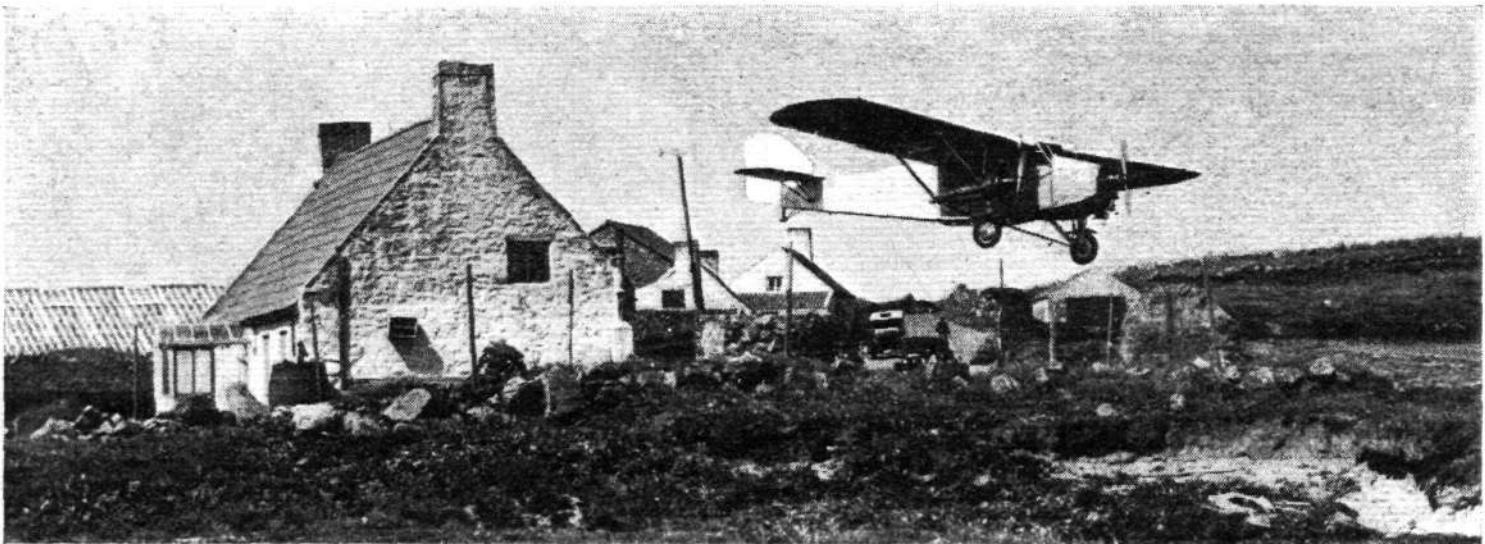
F/O. G. King's machine snapped during the hectic display which he gave in company with F/O. V. Moon ; both flew "Tiger Moths." (*Flight* photograph.)



Side and head-on views of the "Archaeopteryx"—an unconventional semi-tailless machine which first appeared in 1930—in which Sir Philip Cunliffe-Lister and Lord Trenchard showed great interest. (*Flight* photograph.)

COMMERCIAL AVIATION

— AIRLINES ————— AIRPORTS —



TRULY RURAL : A Westland "Wessex" of Cobham Air Routes coming into L'Eree aerodrome in Guernsey. An accurate approach is obviously necessary, but one doubts if the pilot is really cutting things as fine as would appear from this picture.

THE WEEK AT CROYDON

The New Customs Department—and its Construction : Busier and Busier : Kilts and Claymores : Dirty Weather

THE thrill of the week at Croydon has been the somewhat premature opening of the new Customs and emigration departments, which have been formed by reconstructing the spacious "freight import" sheds and finding accommodation elsewhere for imported freight.

When completed the new hall will have an immense oval Customs counter for baggage in its centre, and any number of loads of passengers and baggage will be easily dealt with. Emigration offices will be so positioned that passports can be dealt with whilst baggage is being unloaded and sorted.

At the moment the British working man reigns supreme, and blokes in corduroys, carrying long planks, win easy victories in one-sided tilting matches against gents in black Homberg hats armed only with umbrellas. Incidental music is supplied by men with hammers, and conversations run somewhat as follows:

Customs Office: "Anything to —?"—"bang! bang! bang!" Arriving Passenger: "Only a small bottle of —"—"wham! slam! wham!" C. O.: "Pass friend—all's well."

Suitcases, when opened for inspection, are found to contain mysterious lumps of wet mortar which passengers are suspected of attempting to import without due declaration. As I ventured to hint some time ago, these inconveniences are thrust on us right in the midst of the busy season instead of during the winter period.

Facilities such as a newspaper and tobacco kiosk, buffet and telephone boxes, will doubtless appear in the new hall in due course, though, in the opinion of the traffic managers, the further the average arriving passenger is from the telephone the better. If no telephone box is available passengers depart contentedly to town, but the very sight of the instrument makes them insist on making difficult toll calls to subscribers of whom the exchange has no knowledge.

That this is the busy season, without doubt, is shown by the fact that one day last week no less than forty-one passenger-carrying aeroplanes, mostly of large capacity, arrived at the airport, and a similar number departed. These were all to and from the Continent, and a considerable number of machines must have arrived and departed on internal routes on the same day.

Provincial Airways continue busy to the West, and a recent rush of passengers from the big boats has been experienced.

A party of twenty-one boat arrivals was brought from Southampton to Croydon one day last week. Flying down to Plymouth by Provincials recently I wondered why on earth anyone travelled by train to the West. Apart from speed and clean travel, the scenery—especially the cliffs, red and white next door to one another around Lyme Regis way—are a marvellous sight when seen from the air a little way out to sea.

Cobham Air Routes supplied a touch of colour and romance by booking the famous Dagenham Girl Pipers, seventeen in all, from Croydon to Guernsey on Friday. The youthful pipers, wearing Stuart hunting tartan, were photographed standing before an "Envoy" with Sir Alan Cobham in their midst. One enthusiastic Press photographer used one of the new Air Ministry landing lights, valued at about £300, as a point of vantage. He did not, I believe, put his foot through a lens. The sound of the pipes brought several Scottish engineers from their lairs; they were much affected and unexpectedly stood people cups of tea. Cobham Air Routes' offices were piled high with pipes, claymores, drums, and all the usual accessories of a border raid.

Personalities

Among the week's passengers were a Roman Catholic Bishop from Holland by K.L.M., an air line director to Plymouth and back the same day by Provincials, Capt. Carl Florman, of A.B.A., and Sir Christopher Bullock, of the Air Ministry, inward by Imperial and met by Lt. Col. Shelmerdine, the Director of Civil Aviation.

Olley Air Service had a honeymoon couple, Mr. Nigel and Lady Gloria Fisher, to Paris, and large numbers of passengers to Le Touquet also. Race specials to Manchester and from Newmarket to Wolverhampton were other activities of this firm. Owners, trainers, jockeys, and punters, as well as special machines full of bookmakers, are frequently seen at Croydon. The time has surely come for the first regular fleet of flying horse boxes. The Olley wedding party, by the way, used the breast-high platform, beneath the weather report board in the Main Hall, as a buffet. It is a little hard, if your elevenses consist of a cup of mild tea, to have to peruse weather reports with your nose just above a row of empty bottles decorated with gold foil about which there yet lingers a rare and subtle perfume.

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Radio Planning

A new division of the Air Ministry Signals Branch was established last Monday at Croydon airport. This department will be responsible for the erection of new radio stations in Great Britain and Northern Ireland and their technical administration; the examination of operator candidates; the inspection of radio equipment; liaison with operators; and liaison with radio schools.

Weather Broadcasts

The broadcasting of weather reports, now carried out by Heston, will shortly be replaced by a more comprehensive and frequent service from the new Air Ministry station at Borough Hill, in Northamptonshire. This station will work on the present wavelength—1,186 m.—and the inauguration date will be announced in due course. Meanwhile, test transmissions are being made in the intervals of Heston's programme.

There will be the usual reports thirty minutes after every hour, and many other intermediate reports, details of which can be seen in *Notice to Airmen*, No. 63.

To Le Touquet

In last week's issue details were given of the Le Touquet service to be run by Air Dispatch, Ltd., or Commercial Air Hire, Ltd., which is the operating company. The Avro 642 which is to be used on the week-end service, is at present, of course, carrying the morning newspapers to Paris and is showing an easy cruising speed of 135 m.p.h. So this machine, which will carry a steward and a buffet, will be the fastest machine operating regularly over the route. Sixteen passengers will be carried.

Mr. Humphrey Coysh, who, with B.A.N. Co. has had five years' experience of the traffic on this route, has been appointed traffic manager for the company.

On the South-east Coast

When dealing with Hillman's plans in *Flight* of May 30, details were given of a ferry service between Margate and Ostend. In view of the fact that neither Margate nor Broadstairs have co-operated in the new airport serving this area, the credit for the fact that it is possible for Hillman's Airways to run this service must go to Ramsgate—even though the service may be considered, for time-table purposes, to be running between Margate and Ostend. The town, by the way, has acquired the harbour rights with the idea of developing a seaplane base.

Work on Brighton's airport at Shoreham is now almost finished, and one hears that Olley Air Service, Ltd., are taking over the operation there since B.A.N.C.O. are no longer in business. Lord Amherst, previously with B.A.N.C.O., will manage the airport for the company, and a daily service between Croydon and Deauville, which is to be started next month, will call at Brighton.

Alternative Airports

The plans for the two alternative airports, Gatwick and Gravesend, are now settled, and work on the "martello tower" administration building has already been started.

Airports, Ltd., have arranged, in return for a yearly sum from the Air Ministry, to keep the two airports in readiness for the landing of machines by night and day. Private owners will not be actively discouraged but will, on the other hand, not be encouraged. Confirmed map students might point out that Redhill and its school is in dangerously close proximity to Gatwick, but, of course, when the latter is being used for emergency, conditions will be sufficiently bad to put a stop to instructional and private flying.

The "night and day" clause means that both airports will, before next autumn, be fully equipped for night landings, and it is just possible that both the late K.L.M. service and the D.L.H. night mail will make a base of Gravesend, where, of course, flares are already in use and had been paid for, until the new arrangements were made, by K.L.M. At this airport there is, of course, useful accommodation already in the large hangar constructed by A. J. and J. Law, where workshop facilities are available, and the control tower gives an unrestricted view over the aerodrome.

In due course, both airports will probably be equipped with short-wave approach beacons. At present some of both K.L.M. and D.L.H. machines are fitted with instruments to pick up the short-wave signals at Schiphol and Tempelhof, and one presumes that the other air line machines will need to be similarly equipped. Swissair's Douglas machines, incidentally, have Telefunken equipment for use at the Zurich airport, where the Lorenz system is also in use.

The New Croydon Chief

Air Comdr. E. D. M. Robertson has been appointed Chief Aerodrome Officer at Croydon in succession to Maj. L. F. Richard, who has just retired. Air. Comdr. Robertson has been Director of Personal Services at the Air Ministry.

In South Africa

After "The Outlook" paragraph concerning the use of flying-boats on Empire routes was written it has been reported that South African Airways wish to extend their part of the African Service northwards to Nairobi and suggest the use of Douglas machines for the trunk route.

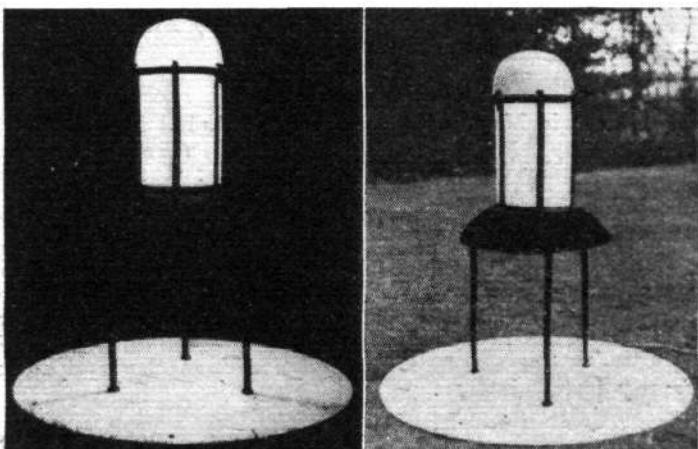
Blind Flying Instruction

Since the original list of approved instrument-flying schools was published, the following schools and clubs have been added: the Bristol and Wessex Aeroplane Club; the Cierva Autogiro Co.; the Kent Flying Club; the Leicester Aero Club; the Misr Airwork, Heliopolis; the Wiltshire School of Flying; and the Worcestershire Flying School.

Another Boundary Beacon

The idea of making an aerodrome boundary beacon in such a way that the approaching pilot can gauge his relative position is a good one. Overhead, Ltd., of Victoria Street, London, have recently produced an example, known as the "Loveridge," in which the top is designed with an orange globe on an opal cylinder, the whole being supported on collapsible legs and illuminating a circular target at the base.

A pilot can, therefore, by gauging the relative position of the opal cylinder and the disc of light—between which there is a dark area—judge his angle of approach and his distance from the boundary. A landing has, in fact, been made at night with the help only of a single boundary beacon of this type and of an Aldis lamp used as a landing light.



The Loveridge boundary beacon as seen by day and by night.

Control at Heston

The work of the Heston control has increased very rapidly since its inception on April 15. On that date nineteen aeroplanes were directed by radio from the control room. On June 8 seventy-seven aeroplanes were handled.

Landings and take-offs registered in the month of May (excluding school aircraft) totalled 3,849, of which 1,913 were commercial machines. The total shows a 33 per cent. increase on the previous month's figures. Six hundred and twenty-seven passengers cleared Customs in May, during which month the Customs officer handled seventy-two commercial aircraft and eighty-eight private aircraft. Jersey Airways carried 665 passengers between Heston and Jersey; Spartan Air Lines carried 316 passengers, and Portsmouth, Southsea and Isle of Wight Aviation, Ltd., 101 passengers between Heston and the Isle of Wight. Inner Circle Air Lines carried 187 passengers on the Heston-Croydon shuttle service.

On the northern routes, North-Eastern Airways carried 146 passengers on the Heston, Leeds, Newcastle and Edinburgh line, and United Airways carried 150 passengers on the Blackpool line. All these figures are for the month of May only.

On Hillman's Airways to Belfast, sixty-three passengers were handled at the Ards airport in the month of May, and fifty-five passengers travelled on Blackpool and West Coast Air Services, Ltd. Besides these regular lines, forty miscellaneous private and commercial aeroplanes passed through Ards.

Commercial Aviation**Internal Mails in Australia**

Plans for the use of certain air routes for all first-class air mail matter at an ordinary rate of 2d. per ounce are being considered by the Federal Ministry. Daily services between Brisbane and Sydney, Sydney and Melbourne, Melbourne and Adelaide, and Melbourne and Hobart are suggested, with a twice-weekly service between Adelaide and Perth. The services will be let by tender to private operators.

A Useful Map

Although the map of India and Burma which has just been added to Bartholomew's General World Series is not primarily a flying map, the positions of all the major aerodromes are shown. The railways are sufficiently strongly marked to be of value. In any case the series is of particular interest to all those who follow air line development abroad.

The Lieutenant Damaged

In taking off from Le Havre to fly to her base at Biscarrosse, near Bordeaux, the giant *Latécoère* flying-boat *Lieutenant de Vaisseau Paris* was caught by a gust which caused her to strike some fishing smacks, damaging a wing, the hull and a float. The boat is being dismantled preparatory to being transported to Toulouse for repairs.

A Traffic Problem

On Friday of last week Cobham Air Routes were faced with an interesting problem. They were due to transport the Dagenham girl pipers—seventeen passengers in all—from Croydon to Guernsey.

The "Envoy" used to Bournemouth carries a maximum of eight *normal* passengers, and each "Wessex" carries six. Yet the ordinary services were run save for the fact that two "Wessex" were used on the afternoon service between Bournemouth and L'Erée. Needless to say, odd pipers may be left here and there when solving the problem, and no prize is awarded.

Midway

Capt. Edwin Musick was again the chief pilot in the second Pacific survey flight made by Pan American Airways with the special Sikorsky S.42. This time the boat reached Midway Island, almost half way across the Pacific.

Eighteen hours after leaving Alameda the S.42 reached Pearl Harbour, Honolulu, and then pushed on to Midway, making this trip in 9 hr. 13 min. The return journey was made by instruments and radio alone, blinds being drawn over the pilot's windows. During the day spent at Midway the boat was taken some two hundred miles westward from the island in order to test the radio transmission from the equipment recently installed there.

To the Scillies

Knowing that it takes anything up to five hours to make the sea crossing between Penzance and the Scillies, that the service is not a daily one, and that something like 14,000 people—apart, of course, from flowers—make the journey every year, one has often wondered why no operator has considered that an air service is worth while. Provincial Airways, it is believed, have considered the project but have not been too satisfied with the one and only natural landing ground.

A fortnight ago it was learnt unofficially that Cobham Air Routes had been examining the possibilities, and that Sir Alan had discovered a landing ground which would be suitable for use with smaller commercial types.

A Brazilian Airship Station

Work is now proceeding on an airship station at Santa Cruz for the use of the *Graf Zeppelin* and, presumably, of the L.Z.129 in due course. The Brazilian Government has made a loan to the Zeppelin Company for this purpose.

"Electras" in Alaska

Two Lockheed "Electras" are now in service on Pacific Alaska Airways' service between Juneau and Nome. "Electras" are also exclusively used by Northwest Airlines of St. Paul on the Chicago-Seattle service.

An Experimental Beacon

Every night between 10 p.m. and 6 a.m. an experimental luminous beacon of the track-indicating type will be operated 1½ miles E.S.E. of Crowborough railway station. The beacon exhibits a white group-flashing light every five seconds, and the track indicated is that between Croydon and Le Bourget.

An "Express" for Egypt

On June 10 the D.H.86 for Misr Airwork left Heston for Cairo, where it arrived on June 12. It is equipped with dual control, radio, and the usual blind flying instruments. Mr. J. J. Parkes flew the machine on its delivery flight and carried Mr. R. P. G. Denman, a director of Airwork, as radio operator. Mr. Norman Alexander, who has joined Misr Airwork as assistant pilot, was one of the passengers.

British Continentals' "Rapides"

Reading a paragraph published last week the impression might, very naturally, have been conveyed that two of British Continental Airways' "Rapides" were second-hand machines. All three are, in fact, new, but two of them were, apparently, originally registered in the name of Hillman's Airways.

Rollason Aircraft Services, incidentally, supplied the three "Rapides" and two have already been delivered.

Air-mapping the Canadian Northland

Those who invade the Canadian northland—and they include all types from missionaries and doctors to miners and trappers—can rely to-day on accurate maps to see them to their several destinations.

Formerly, maps made by land surveyors were the only ones available, but to-day the Topographical Survey of Canada has on hand maps of much of the northland which are accurate to the smallest detail. These maps were made from aerial photographs. For every note on those maps there are photographs at Ottawa to prove that such a lake, headland, or waterway is there. Even Canada's unknown reaches are becoming known through the aerial map-makers. Already a slice of territory which extends from the Arctic coast near Alaska and runs clean through to Montreal has been mapped by Government photographers.

Mapping from the air is not only faster than the old land method, but is far more accurate. It was learned from the first few photographs taken from the air that there were innumerable lakes in the unsettled parts of Canada. Furthermore, it would take years to do a territory by land which takes a few days to do by air, and, in addition, the aerial map eliminates human error. There was, for instance, a region which was shown on the old maps with lakes running east and west. When the pilot flew over the region and the photographer began to take pictures it was seen that those lakes ran north and south and to be of an altogether different shape.

Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list.

- | | |
|--|---|
| June 22. Tollerton Aero Club Garden Party. | Aug. 17. Round the Isle of Wight Air Race and Portsmouth Air Trophy. |
| June 29. Royal Air Force Display, Hendon. | Aug. 24-25. Third International Flying Meeting, Lympne. |
| July 1. S.B.A.C. Display, Hendon. | Aug. 24-25. Cinque Ports Club. International Flying Meeting and Wakefield Cup Race. |
| July 6. Royal Air Force Fly-past before H.M. the King at Duxford. | Aug. 24-30. Raduno del Littorio, Rome. Reale Aero Club d'Italia. |
| July 7. Douze Heures D'Angers, Aero Club de France. | Sept. 4-18. Jungfraujoch Concours, Aero Club de Suisse. |
| July 13. Opening of Leicester Municipal Airport. | Sept. 6-7. King's Cup Air Race. |
| July 20. Opening of Brighton, Hove and Worthing Municipal Airport, Shoreham. | Sept. 14. Cinque Ports Club. Folkestone Aero Trophy Race. |
| July 20-21. Coupe Armand Esders, Aero Club de France. | Sept. 15. Gordon Bennett Balloon Race, Warsaw. |
| July 27. London-Newcastle Race, Newcastle Aero Club. | Oct. 12-28. International Aircraft Exhibition, Milan. |
| July 28. Private Owners' Garden Party, Ratcliffe, Leicester. | |

INTERNATIONAL AEROBATICS

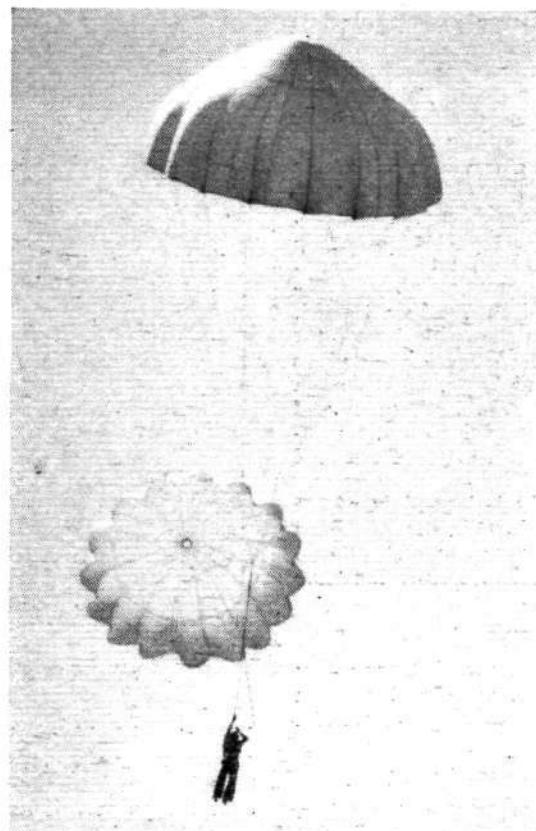
*Well-known Pilots of Several Countries take part in Lisbon Display:
British Machines Present*

AMOST successful and interesting air display, organised by the Aero Club de Portugal, was held at Amadora Aerodrome, near Lisbon, on Sunday, June 9. There were big names in the programme (writes *Flight's* Lisbon correspondent), and the crowds witnessed flying of a kind never before seen in Portugal, such as glider aerobatics. Modern aircraft like the Douglas D.C.2, Junkers Ju.52-3m, Heinkel He70 and an Airspeed "Envoy" represented the commercial side of flying, the Miles "Hawk Major," Klemm, Bücker "Jungmann," D.H. "Puss Moth," D.H. "Gipsy Moth" and the Caudron C.630 ("Simoun") represented the sporting aircraft, and military and aerobatic machines included a Hawker "Fury," D.H. "Tiger Moth" and C.30 Autogiro.

British-mounted

The Portuguese pilots opened the show (which was held in brilliant flying weather) with neat and finished displays on a "Gipsy Moth" and "Tiger Moths." 1st-Lt. José Cabral followed on his "Fleet" A.10 (Kinner B.5)—converted from a seaplane—and Capt. Dias Leite, Portuguese Military Air Force, then impressively showed off the Hawker "Fury"—the first time this machine has been displayed in public in Portugal.

Mme. Edith Clark (French, in spite of the English name) did a delayed



Henri Bournat descending with two "Ors" (French) parachutes.

parachute drop, pulling her rip-cord after a fall of over 1,500 feet, and then the Germans, Rudolf Oeltzer and Anna Reitsch, were towed up behind a Klemm in their gliders; this was the first time gliders had performed in public in Portugal, and the crowd was spellbound with wonder and admiration.

Henri Bournat followed with a spectacular drop with two parachutes—one of the anchored type, fixed under the fuselage of a "Gipsy Moth," and the other of the pack-type; he performed "physical jerks" on the way down.

Cosmopolitan

Fraulein Louise Hoffmann—a pupil of the great Fieseler—gave a magnificent aerobatic display in her Bückner "Jungmann" biplane, and subsequent "turns" were contributed by Frant Novak, of Czechoslovakia; Henri Bournat—sundry gyrations on a trapeze hung from a "Gipsy Moth"; Lts. Luiz de la Guardia and Guitan on the C.30 Autogiro; Lt. Costa Macedo, the Portuguese aerobatic "ace," on his Caproni 113 ("Double Mongoose"); Hans Fischer in his "Windspiel" glider; and, lastly, the hair-raising French pilot, Marcel Doret, who specialises in low-altitude stunting and "enclosure-tickling."

The indefatigable Major Pinheiro Corrêa, of the Portuguese Military Air Force, was responsible for the organisation.

CORRESPONDENCE

The Editor does not hold himself responsible for the opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for publication in these columns.

STANDARDISING PERFORMANCE FIGURES

[3049].—The plea put forward by Lt.-Cdr. Colson in your issue of May 23 for some form of standardisation of performance figures has our full support, and we share his view that the subject is one which commands the closest investigation. We should, however, like to add the following observations to those enumerated in the article, as they have a considerable bearing on published performance figures.

Cruising Speed.—The specification of cruising speed offers some difficulty, because it can be selected by the user within wide limits. The commercial operator with good maintenance facilities will generally use a speed which is higher than that used by a private owner who may not wish to incur a cost of maintenance which may not be such a serious consideration to the transport company. But since a buyer will wish to know the speed capabilities of the aeroplane, it is best to use the maximum speed as a basis of comparison, with, perhaps, a maker's recommendation as to the speed which will be obtained when using a recommended fraction of the maximum h.p.

There will be a difference between the cases of fixed- and variable-pitch propellers which need not be gone into here in detail.

It will be seen that it is not such a simple matter as might be supposed to specify cruising speed. The best method is undoubtedly to state the maximum speed, and in the case of variable pitch, there will generally be some height above sea level at which the maximum speed will be reached when using the maximum permissible induction pipe pressure and r.p.m. licensed for continuous use.

Load.—Tare weight should include water (if any), instruments, etc., but not passenger fittings; some indication of the

weight of passenger fittings should be given. The maximum standard capacity of the fuel tanks and corresponding range should be given. If payload is specified, then the corresponding range must be stated.

Absolute Ceiling, Service Ceiling, initial rate or climb, rate of Climb at rated altitudes, and time to climb from zero standard height (not from rest) to certain altitudes, say 5,000, 10,000, 15,000 ft., etc., should be given in fine pitch if fitted with V.P.

Absolute ceiling with one or more engines stopped is easier to measure, easier to demonstrate, and a more accurate guide to the capabilities of the aircraft than the rate of climb.

Landing run and take-off run, and height over the screen, should be given in a 5 m.p.h. wind with brakes and V.P. propeller if fitted.

With modern streamline aeroplanes some indication of the gliding angle with flaps or air brakes, etc., is useful.

If the landing run and gliding angle are specified, then the stalling speed, which is difficult to measure and demonstrate, has little significance.

Tolerances.—The object of a tolerance on advertised performance figures is to cover variations between individual aircraft of the same type, and the effect of variations in atmospheric conditions which cannot be corrected for, such as bumps, up and down currents, etc. The following tolerances seem to be satisfactory:

Speeds	+ or - 2½ per cent.
Climb, ceiling, etc.	+ or - 5 per cent.
Take off and landing run	+ or - 30 yds.
Tare weight	+ or - 1 per cent.

DE HAVILLAND AIRCRAFT CO., LTD.
F. N. St. Barbe, Sales Manager.

THE INDUSTRY

A NEW ALDIS LAMP

SINCE Croydon is crowded day by day with interested visitors, the sight of the Aldis daylight signalling lamp will be fairly well known even to the ubiquitous man-in-the-street—though one has overheard some quite ingenious theories expressed concerning its use! Actually, of course, the Aldis lamp has a number of uses outside the business of aviation.

This lamp, which was first introduced in 1915 in answer to a demand for a portable signalling unit, is, in reality, a miniature searchlight capable of being aimed accurately on a distant object and of being conveniently switched on and off.

In its latest form the Aldis lamp has a daylight range, in good visibility, of seven miles. There is a pistol grip with two triggers, one for switching the lamp on and off and another, operated by the forefinger, bringing the reflector into correct position after the lamp has been sighted on the object. This system of using a rocking reflector ensures an abrupt cut-off, which would not be possible if the switch itself were used.

The main body is cylindrical, with a detachable front, for which special coloured glasses can be used. The telescope gives an erect image, magnified three times, and is provided with a graticule. There are, for less accurate work, both open and peep sights above the telescope. Most careful filament positioning is necessary for accurate work and this is predetermined at the factory.

A portable battery enables the lamp to be independent of the mains and a transformer is also supplied with the standard equipment for use with A.C. circuits. The weight of the lamp itself is only 4½ lb. and the makers are Aldis Bros., Sarehole Road, Sparkhill, Birmingham.

OIL UPON THE WATERS

Twenty-seven separate tanks, which may be used for as many different grades of lubricating oil are contained in a 10,200-ton tanker now being built on the Clyde for the Anglo-American Oil Co., Ltd.

AN AUSTRALIAN APPOINTMENT

Flt. Lt. F. N. Wright, former instructor to the Australian Fighter Squadron at Point Cook, has been appointed to the Shell Company's aviation staff at their head office in Melbourne. Since he joined the R.A.A.F. he has completed 1,200 hours' flying on various types of machines.

AN ALLOY OF WIDE APPLICATION

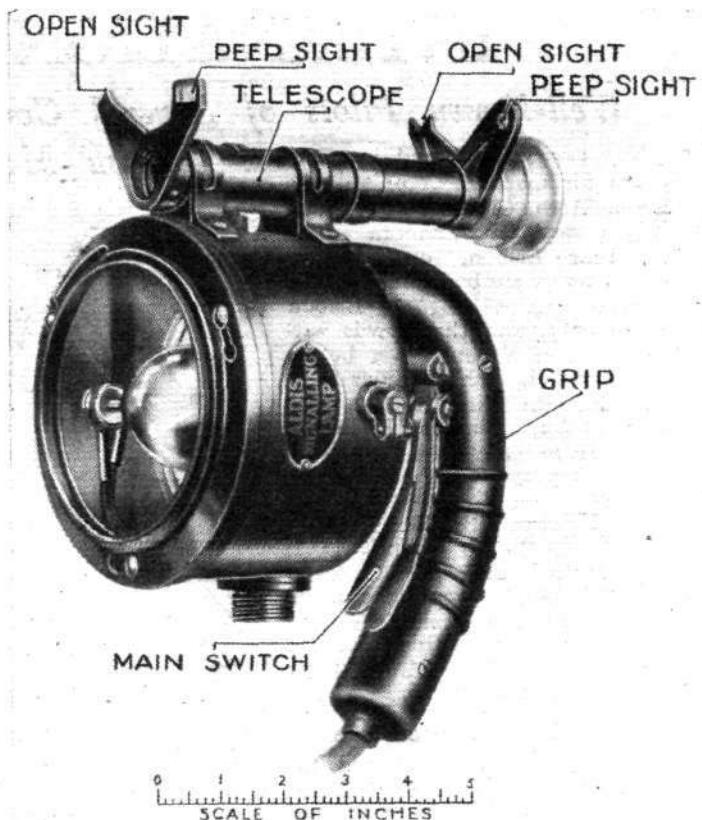
A NON-MAGNETIC, non-ferrous alloy composed of copper, aluminium, nickel, silicon and zinc, which is almost incorrodible and is not affected by the majority of commercial acids, is being increasingly widely used in aircraft work. Tungum alloy, as it is called, is claimed to have more strength than mild steel and to be more ductile and easily worked, to have three times greater resistance to impact than has chrome steel, and to possess remarkable properties of resistance to fatigue.

The manufacturers, the Tungum Sales Co., Ltd., of Iddesleigh House, Caxton Street, London, S.W.1, do not claim that the alloy is suitable for aircraft construction work, but, owing to the fact that it is so ductile, it can be produced in tube form for oil and petrol leads and has, in fact, been widely employed in steam cooling systems. In connection with the latter use, it may be pointed out that the alloy is not corroded by doped fuels and steam. In several well-known British aircraft it has entirely replaced copper for certain parts. Yet another use is as radiator tubes: it has high thermal conductivity, and it has been proved, in fact, that the greater the heat the greater the conductivity. Certain manufacturers are employing it for exhaust manifolds, as it welds easily, both to itself and to steel.

In sheet form it has been used for fuel and header tanks. One aero engine manufacturing company experienced corrosion in water jackets; by adopting Tungum alloy for these components not only was corrosion defeated but it was found practicable to press out the jacket in one operation instead of three. Corrosion, however, was still experienced on the cylinder wall, so a complete cylinder and jacket in Tungum were produced. The alloy is being used on an experimental basis for piston rings and exhaust valve seatings.

A point of interest is that Tungum, which is widely employed in boat construction, is used for the propellers, shafts and sheathings on R.A.F. tenders at Shanghai, as it was found that even copper would not stand up to the corrosion experienced out there.

The company is also producing a metallic paint claimed to



Features of the latest Aldis signalling lamp.

be untarnishable and proof against corrosion. After application the paint is allowed to dry for twenty minutes and then burned into the surface with a blow-lamp. It is possible that the paint will have a wide application in marine aircraft.



NEW COMPANIES

AERO ENGINES LTD.: Private company; capital, £100 in 5s. shares. Objects: To carry on the business of manufacturers and dealers in aircraft engines and components. Directors to be appointed by subscribers. Solicitors: Pinsent and Co., 6, Bennetts Hill, Birmingham.

ANGLIAN AIR SERVICES, LTD.: Private company; capital £1,500 in 1,250 7 percent cumulative participating preference shares of £1 and 1,250 ordinary shares of 4s. each. Objects: To operate air lines, deal in aircraft, etc. First directors not named. Registered office: 110, Cannon Street, London, E.C.4.

SHEFFIELD AERO CLUB, LTD.: Public company; capital, £3,000 in £1 shares. Objects: to give flying instruction to members of the Sheffield Aero Club, to operate aerial passenger transport, etc. Directors: Oliver Spencer Holmes, Stirling Chambers, Campo Lane, Sheffield; William A. Artindall; Reginald S. Horrox; Perry E. Smith.

AERO PRODUCTS COMPANY LTD.: Private company; capital, £3,000 in £1 shares. Objects: to manufacture and deal in aircraft, operate air lines, etc. Permanent directors: Edward B. Boughton; Willie Emmott; Denis T. Brock. Registered office: Brock House, Langham Street, London, W.

PUBLICATIONS RECEIVED

The Art of Flying. By Capt. Norman Macmillan. Price 2/6 net, Gerald Duckworth and Co., 3, Henrietta Street, Covent Garden, London, W.C.2.

Map of India, with Ceylon, Burma and Baluchistan. Price 6/- net, John Bartholomew and Son, Ltd., 12, Duncan Street, Edinburgh.

INCREASE OF CAPITAL

COMMERCIAL AIR HIRE, LTD. (Airport of London, Croydon, Surrey). The nominal capital has been increased by the addition of £10,000 beyond the registered capital of £500. The additional capital is divided into 10,000 5 per cent cumulative preference shares of £1 each.

AERONAUTICAL PATENT SPECIFICATIONS

(The numbers in parentheses are those under which the specification will be printed and abridged, etc.)

(Published June 20, 1935)

- 31868. HAWKER AIRCRAFT, LTD., and CAMM, S.: Bomb or the like carrying and releasing gear for aircraft (428,934).
- 31960. SHARMA, D. N.: System relating to landing aeroplanes during fog (428,867).
- 33005. VICKERS (AVIATION), LTD., and WALLIS, B. N.: Biplane-wing systems for aircraft (429,186).
- 33113. VICKERS (AVIATION), LTD., and WALLIS, B. N.: Method of and means for assembling and connecting intersecting bracing members (429,188).
- 17499. FAIREY AVIATION CO., LTD., and TIPS, E. O.: Windscreens for the cockpits of aircraft, motor boats, or motor cycle sidecars, or for use in similar situations (428,806).
- 18535. FAIREY AVIATION CO., LTD., and HAGGER, V.: Cowling and the like for aircraft and other structures (428,898).
- 196C3. SANTONI, E.: Plate cameras, particularly for aeronautical use (428,081).
- 3161. AKT.-GES. DER EISEN-UND STAHLWERKE VORM. G. FISCHER: Tail-skid shoes for aircraft (429,167).
- 19297. ARMSTRONG-WHITWORTH AIRCRAFT, LTD., SIR W. G., and LLOYD, J.: Gun mountings on aircraft (429,061).

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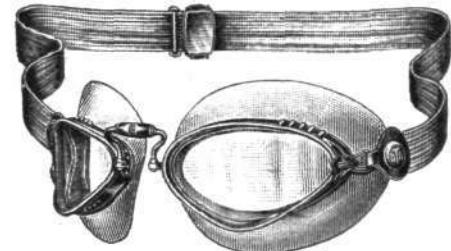
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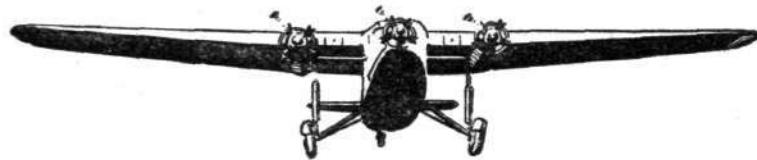
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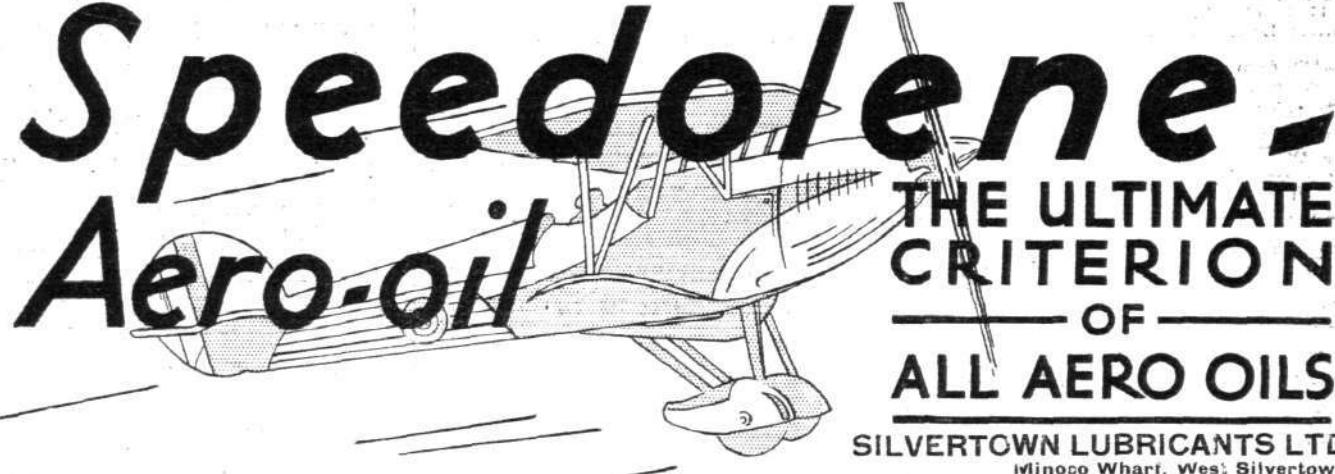
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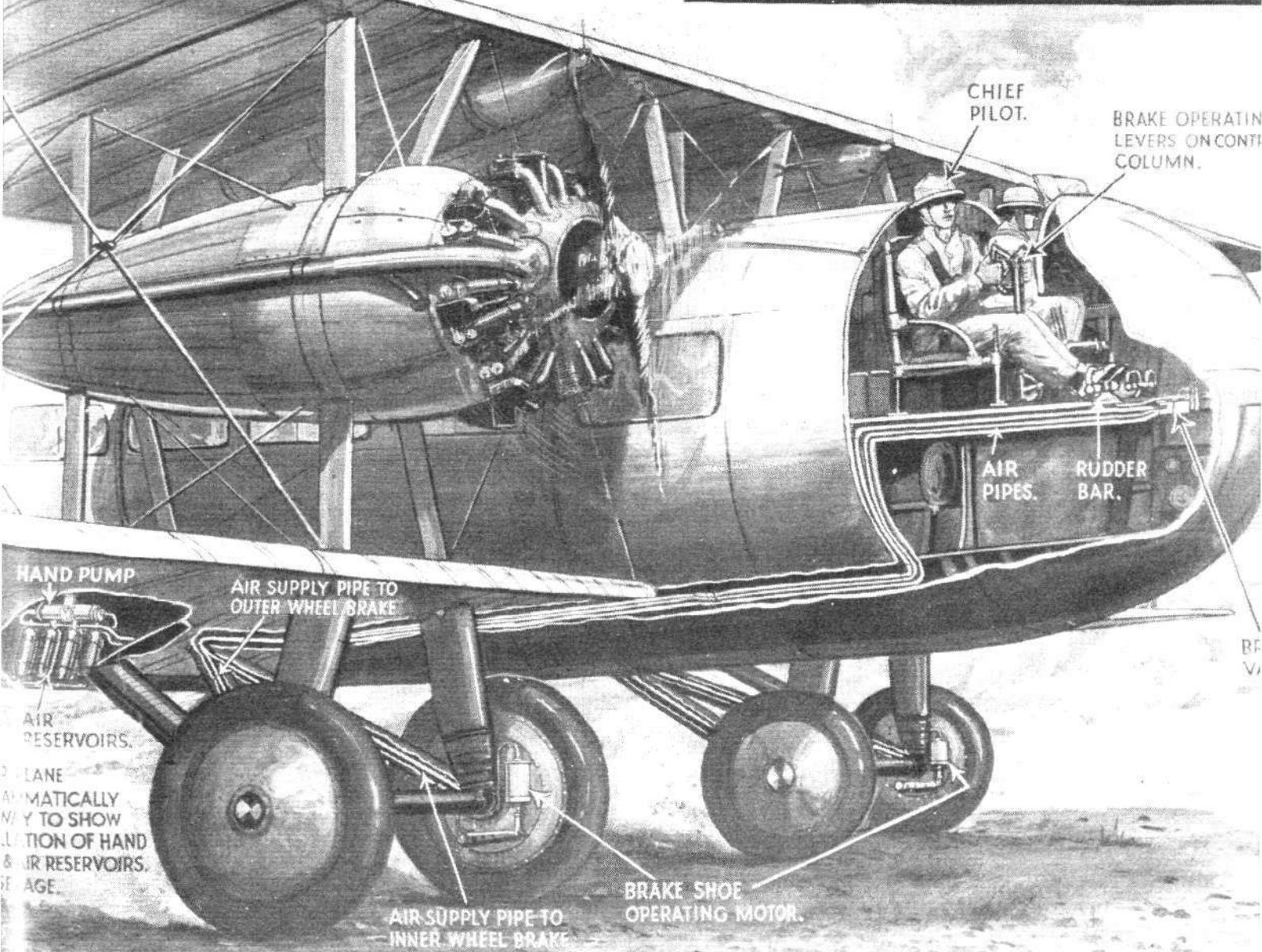
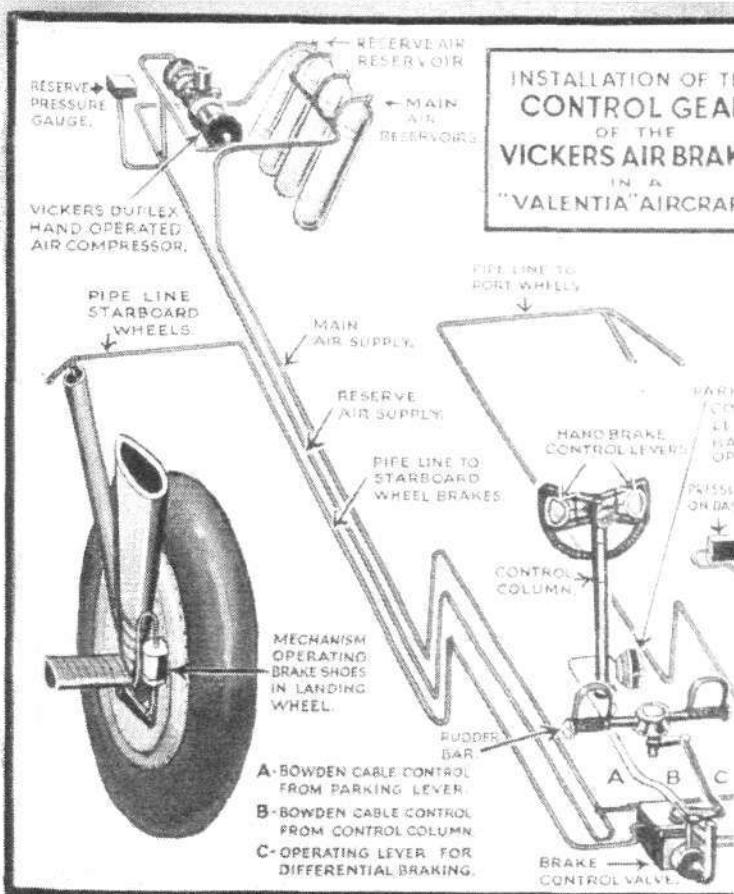
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